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Vol. 4.

EVERYMAN'S ENCYCLOPAEDIA

FOURTH EDITION

IN TWELVE VOLUMES

VOLUME FOUR

COQUELIN, BENOÎT CONSTANT—
EMULSION

EDITED BY E. F. BOZMAN M.A. (*Cantab.*)

EVERYMAN'S ENCYCLOPAEDIA

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LONDON: J. M. DENT & SONS LTD

© J. M. DENT & SONS LTD, 1958
Aldine House · Bedford Street · London
Printed in Great Britain
by Spottiswoode, Ballantyne & Co. Ltd.
London and Colchester
and bound at
The Aldine Press · Letchworth · Herts
Paper supplied by
The Ryburndale Paper Mills Co. Ltd.
First edition 1913-14
Second edition 1931-33
Third edition 1949-50
Fourth edition 1958

ABBREVIATIONS

The titles of subjects, which are printed first in bold type, have been abbreviated within each article to the initial letter or letters

ac. , acre(s).	lat. , latitude.
agric. , agricultural.	lb. , pound(s).
ambas. , ambassador(s).	l. b. , left bank.
Amer. , American.	long. , longitude.
anct. , ancient.	m. , mile(s).
ann. , annual.	manuf. , manufacture.
arron. , arrondissement.	M.E. , Middle English.
A.-S. , Anglo-Saxon.	min. , minute(s).
A.V. , Authorised Version.	Mod. E. , Modern English.
b. , born.	m.p.h. , miles per hour.
Biog. Dic. , Biographical Dictionary.	mrkt tn. , market town.
bor. , borough.	MS., MSS. , manuscript(s).
bp. , birthplace.	mt, mts. , mount, mountain(s)
Brit. , British.	N. , north; northern.
c. , about.	N.T. , New Testament.
C. , Centigrade.	O.E. , Old English.
cap. , capital.	O.F. , Old French.
cent. , century (7th cent.).	O.T. , Old Testament.
chem. , chemistry.	oz. , ounce(s).
co. , county.	par. , parish.
com. , commune.	parl. , parliamentary.
cub. ft. , cubic feet.	pop. , population.
d. , died.	prin. , principal.
Dan. , Danish.	prof. , professor.
dept. , department.	prov. , province; provincial.
dimin. , diminutive.	pub. , published; publication.
dist. , district.	R., riv. , river.
div. , division.	R.A.F. , Royal Air Force.
E. , east; eastern.	r. b. , right bank.
eccles. , ecclesiastical.	rep. , republic.
ed. , edition; edited.	Rep. of Ireland, Eire.
educ. , educated.	R.N. , Royal Navy.
e.g. , example.	Rom. , Roman.
Ency. Brit. , <i>Encyclopædia Britannica</i> .	r.p.m. , revolutions per minute.
Eng. , English.	R.V. , Revised Version.
estab. , established; establishment.	S. , south; southern.
fl. , flourished.	sec. , second(s).
Flem. , Flemish.	sev. , several.
fort. tn. , fortified town.	Sp. , Spanish.
Fr. , French.	sp. gr. , specific gravity.
ft. , feet.	sq. m. , square miles.
Ger. , German.	temp. , temperature.
Gk. , Greek.	ter. , territory.
gov. , government.	tn. , town.
Heb. , Hebrew.	trans. , translated; translation.
hist. , history.	trib. , tributary.
horticult. , horticultural.	U.K. , United Kingdom.
h.p. , horse-power.	U.N. , United Nations.
H.Q. , headquarters.	univ. , university.
hr(s) , hour(s).	U.N.O. , United Nations Organisation
in. , inch(es).	urb. , urban.
inhab. , inhabitant(s).	U.S.A. , United States of America.
is. , island(s).	vil. , village.
It. , Italian.	vol. , volume.
Jap. , Japanese.	W. , west; western.
jour. , journal.	Wm. , William.
Lat. , Latin.	yd(s) , yard(s).

Coquelin, Benoit Constant (1811-1909), Fr. actor, destined to be a baker, but fortunately his histrionic talent was discovered, and he was allowed to enter the Conservatoire and studied under Régnier. Here he gained the second prize for comedy (1860), and in the same year played the part of the comic valet, Gros René, in Molière's *Dépit amoureux* at the Comédie Française. In 1864 he became *sociétaire* of that theatre, and for the 22 years following played with conspicuous and well-deserved success the leading roles in over 40 new plays. He excelled in the impersonation of characters with a humorous bias, and his originality was especially marked in such plays as de Banville's *Gringoire* (1867); Ferrier's *Tabarin*; Émile Augier's *Paul Forestier* (1871); Dumas's *L'Étranger* (1876); Lomou's *Jean Jacier* (1877); Pailleuron's *Le Monde où l'on s'ennuie* (1881); and Erekmann and Chatrian's *Les Rantcau* (1884). As there had been some difficulty over his prov. and foreign tours, he gave up in 1886 his position at the Comédie Française and spent 2 years visiting with his company the chief cities of Europe and America. From 1890 to 1892 he was again associated with his old theatre, where he appeared as Labussière in Sardou's *Thermidor*, but in 1892 he again went on a foreign tour and never afterwards appeared at the Comédie. For 2 years from 1895 he acted at the Renaissance theatre in Paris, but in 1897 became director of the Porte-Saint-Martin. It was here that he created his most famous and probably his finest role, that of the inimitable Cyrano de Bergerac, in Rostand's play of that name (1897). Such was his success in this part that Rostand is said to have written *Chantecler* solely for C. But C. d. quite suddenly in the midst of the rehearsals for this new romantic drama, which was to have carried Paris by storm.

Coquelin, Ernest Alexandre Honoré (1848-1909), Fr. actor and author, brother of Benoit Constant C. He played at Odéon and the Variétés, but was mainly associated with the Comédie Française, where his spirited and witty interpretation of a series of comic roles attracted large audiences. His humorous *Livre des convalescents*, 1880, and *Fariboles*, 1882, etc. afford delightful reading.

Coquerel, Athanasé Josué (1820-75), Fr. Protestant divine, son of A. L. C. C. (q.v.), helped publish the first scientific theological review of his country (*Nouvelle revue de théologie*, 1852). In *Jean Calas et sa famille*, 1857, *Précis de l'église réformée*, 1862, etc. he expressed his enlightened ideas. He wrote also on art in *Les Beaux-Arts en Italie*, 1857.

Coquerel, Athanasé Laurent Charles (1795-1868), Fr. Protestant divine, lived

in Holland 1818-30. From 1831 to 1844 he ed. 3 papers, *Le Protestant*, *Le Libre Examen*, and *Le Lien*, and by his advocacy of a wider religious freedom angered the orthodox Calvinists. His contemporaries admired him chiefly for his oratory; but he wrote many works, including a *Réponse to Strauss's Life of Christ*, 1841, and a treatise on the Reformed Churches of France, 1861.

Coques (or Cox), Gonzales (1618-84), Flemish painter, was a pupil of Pieter Bruechel (q.v.), and later of David Ryo-kaert the second. In 1671 he became painter in ordinary to Count Monterey, Governor-General of the Low Countries. Sometimes he depicted tavern and rustic scenes, but he excelled in portraiture, in which he took Van Dyck as his model. Mainly small in scale, his works found favour with such important patrons as the Archduke Leopold, the Prince of Orange, and Charles I of England.

Coquet, riv. of Northumberland, England, rising in the Cheviot Hills and flowing 40 m. N.E. to enter the sea at Amble. It is navigable to Warkworth; just off the riv. mouth is C. Is.

Coquimbo: 1. Mountainous prov. of Chile. The chief industry is mining copper, gold, and silver, and great iron-ore deposits exist (the combined output of iron-ore from C. and Atacama in 1953 was just under 3,000,000 metric tons). Branches of the Cordillera mts lie in the E.; in the W. agric. is carried on in irrigated valleys. The cap. is La Serena. Area 15,400 sq. m.; pop. 236,500.

2. Tn. of above prov., 8 m. SW. of La Serena, an industrial centre and agric. market on C. Bay on the Pacific. It is the winter quarters of the Chilean fleet. It exports grain, fruit, copper, and manganese. Pop. 30,000.

Coquito, or *Jubaea spectabilis*, is a palm which constitutes a genus in itself. The sap is evaporated by the natives of Chile to make it yield a palm-honey.

Cor Anglais, or **English Horn**, wood-wind instrument of the reed species, belonging to the oboe family, of which it is the tenor. It is related to the oboe as the basset horn is to the clarinet. A C. A. differs from an oboe in having a curved mouthpiece, a larger, globular bell at the bottom, and a wider conical bore to the wooden tube. It has a compass of two octaves and a fifth, and possesses



COR
ANGLAIS

a nasal tone, its quality, however, being more mellow and mournful than that of the oboe. In his It. version of *Alceste*, Gluck wrote parts for C. A. (1767). Other examples are the shepherd's piping in *Tristan and Isolde*, and the faun's in Debussy's *L'Après-midi d'un faune*. 'Anglais' probably does not mean 'English,' but is a corruption of *angle*, many of the earlier instruments being crooked or bent.

Cora, see **Cori**.

Coracle, or **Curraich** (Lat. *curuca*, Welsh *coruwl*), skiff with a slight wooden frame, covered over with hides, and made watertight by a coating of tar and pitch. Caesar describes the C.s in use among the Britons of his day, and hist. speaks of a seven days' voyage by missionaries in 878



E.N.I.

CORACLES IN WALES

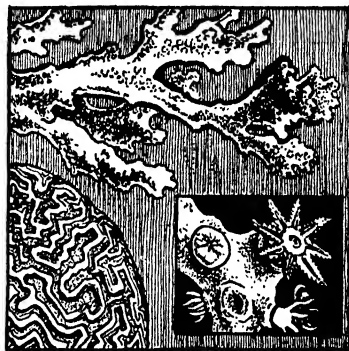
These craft are used for fishing on the R. Towy, Carmarthenshire.

from Ireland to Cornwall in a C. made of two and a half skins. C.s were oval in shape, about 3 ft. by 4 ft. in size. The rower propelled himself by a paddle. If two men went fishing in C.s they held the net between them, hauling it up after a catch till their boats touched and the fish could in this way be secured. This kind of canoe is still used on the It. Severn and R. Towy, and in Clare. C.s have disappeared from the Usk and the Wye, and on the Taff the last was seen in 1850. In Ireland and Scotland C.s are no longer seen. Light boats, very similar, were built for crossing the lakes on the way to Klondike after the passage of Chilkoot Pass, Alaska.

Coracoid Process, beak-like projection in the upper part of the scapula, or shoulder blade. It may be felt by pressing the finger in the depression just below the collarbone, two-thirds of its length outwards.

Coral, the solid support or hard skeleton of solitary or colonial coelenterates. It is secreted from sea-water, and is chiefly carbonate of lime.

The Anthozoan polyps are the prin. source of the C. reefs of the world. The skeletons of many other organisms contribute to C. masses, such as Polyzoa and Mollusca, but these cannot be properly included in the term C. The reef-building C.s are the Madrepora and Maecandrina, confined to waters in which the temp. does not fall below 68° F. even in the coldest months. C. reefs are abundant in the W. Indies, on the coast of Brazil, on the E. coast of Australia, and in the Central Pacific. The great C. reef regions are within the limits of the trade-winds and monsoons, with the exception of the Ellice and Marshall Is.



CORAL

C.s may be roughly classed under two heads—horny, and lime or stone C.s. The former consist chiefly of a horny secretion from the polyps, while the stone C. consists almost entirely of lime firmly joined in a solid mass. All possible gradations, however, can be found, so that it is impossible to draw a sharp line between the two groups. Corallidae C. is quite solid, and is produced in concentric layers by the living gelatinous substance enveloping it, from which the polyps project. When the C. is taken out of water, the gelatinous living part soon decomposes and disappears. Beyond their general utility and value as sources of lime, C.s are not of any especial industrial importance with the exception of the red C. (*Corallium rubrum*) of the Mediterranean Sea. This C. is susceptible of a high polish, and is largely used for ornamental purposes. It has a shrub-like, branching form, and grows about a foot high, being as thick as the little finger of the human hand. Extensive fisheries are carried on in the Mediterranean, and it is exported to India. Red C. is also obtained in the Red Sea and Persian Gulf. It also occurs off the NW. coast of Africa. Black C. is still more highly prized, and has a wide distribution, growing to a considerable height

and thickness in the tropical waters of the Great Barrier Reef of Australia. It is also found in the Persian Gulf. From remote times, *C.* has been highly prized for personal ornaments and decorative purposes generally. In India, a great trade was carried on from the beginning of the Christian era, and it was esteemed as a substance endowed with sacred properties. A belief in its potency as a charm continued to be entertained throughout medieval times, and among the Romans branches of *C.* were hung round the children's necks to preserve them from danger, and many medicinal virtues were attributed to it. In Italy, at the present day, *C.* is worn as a preservative from the evil eye. The range of value of *C.* varies according to colour and size, and its price is considerably affected by the fluctuations of fashion. Rose-pink *C.* is the most valuable. Good coloured *C.* commanded high prices in China, where it was in great requisition for the button of office worn by the mandarins. It is also a favourite ornamental substance with the negroes of Central Africa and America.

Coral Fishery, since the beginning of the Christian era, has been a lucrative trade. The finest fisheries are along the N. coast of Africa, in Tunisia, Algeria, and Morocco. Before the 16th cent. these *C.* reefs were controlled by the It. republics. For a time the Tunisian reefs fell into the hands of Spain, but the monopoly of trading was ultimately secured by France, who held it till 1793, when the trade was thrown open to other nations. For a short period the control lay in the hands of Great Britain, but finally was regained by France. Boats not bearing the Fr. republican flag have to pay heavy dues to fish. *C.* is only fished once in ten years, as it requires that time to develop. The boats vary in size from 3 to 14 tons. The raw material is made up chiefly in It. cities. There are also valuable *C.* reefs off the coasts of Italy, Catalonia, and Provence.

Coral Islands and Reefs are low is. or reefs formed from the petrified calcareous skeletons of *C. polyphi*. They may best be subdivided into three classes, one of which often develops from the other. *Fringing reefs* are found extending outwards from the shore, from which they are not separated by a channel. *Barrier reefs*, on the other hand, are found at some distance from the shore, along which they extend at a more or less uniform distance. The greater part of such a reef is submerged, its place being marked by the line of breakers, but in places it rises above the sea level, and here sparse vegetation is found. The channels which lie between reef and shore are of the greatest value as providing roadsteads for shipping. The greatest of barrier reefs is the Great Australian Barrier Reef off the coast of Queensland which stretches intermittently for over 1000 m. *Atolls* are small is. roughly circular in shape and enclosing a lagoon. These typical *C.* is. vary greatly in size, and have sometimes a length of over 70 m. Beneath the lagoon, to which there is usually access through a gap in the encircling ring, is a *C.* floor. The

depths of these lagoons vary from a few feet to about 300, and frequently the lagoon forms a safe harbour for ships. *C. polyphi* flourish most in the W. Pacific and in the shallow seas near Australia, Mexico, the W. Indies, and New Guinea. The reefs and is. are composed principally of rock which bears but little superficial resemblance to the organic substance which we recognise as *C.* The foundation is one of white limestone, which often further assumes a crystalline form under the influence of chemicals present in the salt water. To this are added *C.* fragments washed off from another part of the reef and rendered shapeless by pressure. Sand and the skeletons of molluscs, radiates, etc., form the rest of the mass, and on this the living *C.* builds. The growth of the *C. polyphi* is restricted by many circumstances. Warm salt water is required, free from cold currents, and with a temp. which does not fall below 63° F., and the *polyphi* must also have abundance of food if it is to develop properly. The water must be clear, not muddy. Reef-forming *C.s* live in symbiotic association with algal plants and therefore can only flourish at shallow depths where the light is good. The rate of growth varies with the species and the conditions; some species build at the rate of 1 in. per year, others at the rate of 3 in. per year, and still higher rates of progress have been chronicled in certain parts. Since the growth of *C.* is restricted by so many conditions, the circumstances and procedure by which is. and reefs have come to their present state have been much discussed. The first serious attempt to provide a theory was made by Adelbert von Chamisso (q.v.) who made a voyage through the South Seas from 1815 to 1818. He conjectured that the *C.* structures were built up in places where the sea bottom came near to the surface—in short on submarine mts. Growth took place on the sloping sides of the mts., and continued in an outward direction so that the atoll with its lagoon was the result. The subject next engaged Darwin's attention during the celebrated voyage of the *Beagle* (1831-6). He propounded the view that the construction of the reefs had commenced when the land was above the surface of the sea, and that subsidence had then followed as the growth proceeded. When first built, therefore, every *C.* structure would be a fringing reef, when the land actually rose above the surface. As the land sank, construction would continue on the old foundations and a barrier reef would result. In time the land would entirely disappear, and the atoll, the final form, would be complete. Much evidence favouring Darwin's theory of subsidence has been brought to light. Borings put down in the lagoon of the atoll of Maratua passed through 429 metres of reef and reef debris without reaching the foundations. Geophysical work by the United States Navy on Bikini indicated that coral-line material exists to the depth of at least 600 metres below sea level. These depths are far below those at which corals

can live, and suggest long-continued subsidence of the floor on which the reef was built up. An alternative hypothesis put forward by Daly postulates a general rise in sea level instead of a subsidence of the foundations. Daly's explanation takes account of the lowering of the sea level during the Glacial Period, when much water was locked up in the ice sheets. When the sea level was low, he suggested, marine erosion prepared platforms on which coral reefs began to grow up as the climate improved. As the sea level rose when the ice sheets melted, the growth of coral reefs kept pace with the rise, and built up a great thickness of reef material. It seems probable that both a rise in sea level and a subsidence of the foundations may have contributed to the development of thick coral reefs. See C. R. Darwin, *Structure and Distribution of Coral Islands*, 1842, 1889; J. D. Dana, *Coral and Coral Islands*, 1872. W. Savile Kent, *Great Barrier Reef of Australia*, 1893; J. S. Gardiner, *Coral Reefs and Atolls*, 1931; B. Malinowski, *Coral Gardens and their Magic*, 1938; R. Gibbings, *Over the Reefs*, 1948. See also ATOLL.

Coral-flower, Coral tree, see ERYTHRINA.

Coral Sea stretches between the New Hebrides to the E. and Australia to the W., being part of the Pacific. The coral reefs give the sea its name. The C. S. was the scene of an Amer. naval and air victory over the Jap. Navy in May 1942. An exceptionally large Jap. naval force, which had been concentrated at the Louisiade Is. in the C. S., was attacked by an Amer. task force of ships and aircraft on 4 May, and in an engagement lasting sev. days the Jap. Navy lost a number of battleships (estimated at over half a dozen), while inflicting only slight loss on the Amer. forces. For details see NAVAL OPERATIONS IN SECOND WORLD WAR.

Coral Snakes, relations of the cobra in the family Colubridae. *Elaps corallinus* is a typical specimen; it occurs in the tropical forests of S. America, and its small body, less than 3 ft. in length, is ringed with coral-red. It is highly poisonous, but has a small mouth.

Corallian (Fr. *Corallien*), in geology, the name of a div. of the Jurassic System. In Britain the C. Series outcrops in the S. of England and in Yorks. as a predominantly calcareous group, whereas from Beds. to Lincs. it is mostly clay.

Coralline, popular name applied to *Corallina*, genus of calcareous algae. *C. officinalis* is a beautiful seaweed of red colour, but others are often purple.

Coralline Crag, a Pliocene deposit of light coloured sands and beds of comminuted shells (crag) with a phosphatic nodule bed at the base. Exposed only in SE. Suffolk.

Coram, Thomas (1668-1751), philanthropist, b. Lyme Regis. A man of varied ventures by sea and land; settled in London, where, moved by the sufferings of the poor, he estab. the Foundling Hospital. In this work he was supported by Hogarth; but his charity so impoverished him that he ended his days on a small annuity raised by subscription. See FOUNDLING HOSPITALS. For life, see

J. Brownlow's *History of the Foundling Hospital*, 1658.

Coran, see KORAN.

Corangamite, saltwater lake in Victoria, Australia, with an area of 76 sq. m. and a circumference of 99 m. It has no outlet, and is shallow on the S. side.

Coranto, see COURANTE.

Coras Iompair Eireann, Ireland's Transport Company, formed in 1945 by the amalgamation of Great Southern Railways with the Dublin United Transport Company. Under the Transport Act, 1950, C.I.E. was made a statutory body comprising the undertakings of C.I.E. (1945) and the Grand Canal Company. It operates rail and road services, both passenger and goods, through 23 co.s of Ireland. The total mileage of railway lines owned by the Company is 2,477 m. 22 ch. Main-line services operate from Dublin to Cork, Limerick, Galway, Tralee, Sligo, Ballina, Rosslare Harbour, and Waterford. Most of C.I.E.'s main-line rail passenger services are now operated by diesel trains, composed of two diesel railcar units with intermediate coaches. Road passenger services, operated from a number of main centres, usually the prin. cities or tns., provide connections to areas largely not served by rail, and as far as possible co-ordinate with main-line passenger services. City bus services are operated in Dublin, Cork, Limerick, Waterford, and Galway. A chain of six hotels situated at Killarney, Kenmare, Parknasilla, Galway, Sligo, and Mullrany, called Great Southern Hotels, are owned and run by C.I.E.

Freight services by inland waterways are also operated by C.I.E. over the canal system previously known as the Grand Canal. The mileage of the canal system is 149 m., with a further 7½ m. on the Barrow Navigation and 123 m. on the Shannon Navigation, making a total mileage of canal and connections of 343½ m.

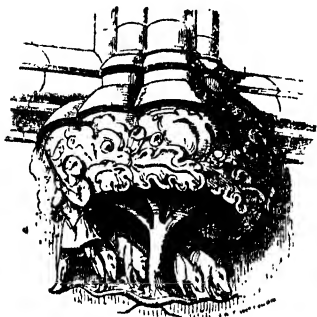
Corbeil-Essonnes, Fr. tn, cap. of an arron., in the dept of Seine-et-Oise, on the Seine. The church is partly 12th cent., and the important flour mills are of medieval origin. There are railway workshops and printing works. Pop. 21,000.

Corbel, in architecture, is a projected piece of stone, wood, or iron placed so as to support a pillar, beam, or roof-truss. In Norman architecture the cornice is supported on C. stones, the ends of which are carved; and in mediæval castles the main beams of the floors were frequently carried on large C.s. Ornament comprised foliage, or human or animal heads, often grotesque. The term bracket is sometimes used for a C., but bracket is better applied as synonymous with cantilever (q.v.).

Corbet, Richard (1582-1635), poet and bishop, son of a gardener at Ewell, Surrey, educ. at Westminster School and at Christ Church, Oxford, of which he became dean. He was afterwards appointed chaplain to James I, Bishop of Oxford, and Bishop of Norwich successively. He had a reputation for conviviality and wit. His only pub. writings were *Certain Elegant Poems*, 1647, and *Portica*

Stromata, 1648, the latter ed. with a life of the author by Octavius Gilchrist, 1807.

Corbett, Harvey Wiley (1873-1954). Amer. architect; b. San Francisco; graduated univ. of California, 1895; then studied at the Ecole des Beaux-Arts, Paris, till 1905. Member of the firm of Helmle & C., New York. Designed and built Maryland Institute, Brooklyn Masonic Temple, Springfield (Massachusetts) Municipal Group, Bush Terminal Office Building (New York), George Washington Masonic National Memorial (Alexandria, Virginia), Bush House (London, England), also King's College Hospital Buildings, Holy Innocents' Church, and St. Francis Xavier's School—all in Brooklyn.



CORBELL

Merton College Chapel, Oxford

Corbett, James John (1866-1933). Amer. prize-fighter, b. San Francisco, California, U.S.A. He began work as a book-keeper in a local bank. After winning in some amateur boxing matches, he became a professional in 1884. In 1889 he knocked out the veteran Joe Choynski in 28 rounds. He defeated Jake Kilrain in 1890 and fought a drawn battle with the famous negro boxer Peter Jackson. By this time he had earned the right to a contest with John L. Sullivan, who for many years had been world's champion heavy-weight pugilist. So firmly was Sullivan estab. in the esteem of the Amer. public that it was not thought that C. had any chance of winning. However, he defeated Sullivan in 1892 in New Orleans; and soon became known by the sobriquet Gentleman Jim. He successfully defended his title against Charlie Mitchell, the Brit. heavy-weight champion, but was knocked out by Bob Fitzsimmons at Carson, Nevada, 1897, by the blow which became famous as the solar plexus punch. His last fight was in 1903, when he was knocked out by Jim Jeffries. C. then went on the vaudeville stage and was a big success. He wrote his reminiscences under the title *The Koor of the Crowd*, 1925.

Corbett, Sir Julian Stafford (1854-1922), historian, educ. at Marlborough and Trinity College, Cambridge. Before the

First World War he pub. a number of works on naval hist.; and, after it, contributed *Naval Operations* to its *Official History*, 1920. He was knighted in 1917.

Corbie, Fr. tn in the dept of Somme, at the confluence of the Somme and the Ancre. It had a famous abbey and was the birthplace of Saint Colette, a 15th-cent. Franciscan reformer. It has mineral springs, and haberdashery manufs. Pop. 3900.

Corbie Steps, or **Crow Steps**, Scottish expression derived probably from corbel, the similarity of this word to corbie, Scottish for crow, accounting for the alternative name. From the 14th to the 17th cent. gables in Scotland (also often in Flanders and Holland) were finished by stepped slopes, called C. S. It was customary to arrange steps for the passage from one side of the roof to the other, hence arose the fashion of cutting the parapet alongside into steps.

Corbridge, par. on the Tyne in Northumberland, England, 3½ m. to the E. of Hexham. The dist. is of anct habitation, for an axe of the New Stone Age (c. 3000 B.C.) has been found near by. The Rom. station known as *Corstopitum*, which served as an important base for military operations under Antoninus Pius, lay half a mile to the W. Ruins of 2 great granaries facing what must have been a broad highway were excavated in 1907. These had lain embedded in the earth since the 5th cent., when the site was abandoned. The par. church was probably built about AD 674, and is of architectural interest. Pop. 2500.

Corbulo, **Gnaeus Domitius**, Rom. general of the 1st cent. AD. His popularity with the soldiers and his successes in the field aroused the envy of Claudius, who recalled him from beyond the Rhine. Between 58 and 63 C. conducted a series of brilliant campaigns against the Parthians; but 4 years later he was summoned to Greece by Nero, who ordered him to commit suicide at Cenchreae on the grounds that he was guilty of conspiracy.

Corbusier, **Le**, see LE CORBUSIER.

Corby, tn in Northamptonshire which has grown rapidly from a small vil. to its present size since 1930. It owes its importance to the iron and steel foundries based on locally found ironstone. The major expansion has taken place since 1933 and is due to the estab. of Messrs. Stewarts & Lloyds Ltd. steelworks, which employ about 6000 hands. The Brit. Oxygen Co. Ltd. has a research plant here. The anct 13th-cent. church stands in the old vil. to the E., and contains a founder's tomb and a triple sedilia. There are a number of fine 17th-cent. stone houses. C. is one of the 'New Towns' (q.v.) designated under the Act of 1946; it is proposed that its ultimate population will be 40,000. Pop. (1954) 20,000.

Coreyra, anct name of Corfu (q.v.).

Coreyra Nigra, see KOREULA.

Cord, derived from the Greek *chorda* through the Lat. *chorda*, the string of a musica instrument, now denotes a piece of thick string composed of sev. woven or twisted strands. In the 17th cent. in England,

and in America, a C. of wood was cut timber, usually for fuel, measuring 8 ft long by 4 ft broad, and 4 ft high.

Cordaiales, group of Palaeozoic gymnosperm plants with strap-like leaves. They were abundant as large trees in Coal Measure forests. *Cordaies* is the best-known genus.

Corday d'Armont, Marie Anne Charlotte, commonly called **Charlotte Corday** (1768-93), Fr. revolutionary, b. St Saturnin, near Sées in Normandy, of a noble family, among her ancestors being Pierre Corneille. At first a strong supporter of the Fr. Revolution, she afterwards thought that it had gone too far in its atrocities, and on the overthrow and proscription of the Girondists (May 1793) she determined to support the opposing side. She chose Marat as her first victim, and, after two unsuccessful attempts, she gained admission to him under pretence of communicating news of the Girondists at Caen, and stabbed him in his bath, where he d. She was arrested, brought before the revolutionary tribunal, and condemned to be guillotined. Her execution took place on 17 July 1793. See life by M. Cher, 1929.

Cordeliers, branch of the Franciscan or Grey Friars, so named from wearing a knotted cord for a girdle. The name was also applied to the members of a club founded in Paris in 1790 in the former convent of the C. during the Fr. Revolution, the chief leaders of which were Marat, Danton, Hébert, and Camille Desmoulins. It fell in importance after the execution of Danton, and was ordered to be discontinued by the Convention of 1795.

Cordials, sweetened and flavoured spirits once highly thought of as heart stimulants.

Cordier, Henry Joseph Charles (1827-1905), Fr. sculptor, a pupil of Fougnet and Rude. From the first he showed an alert interest in anthropology. The Jardin des Plantes, Paris, possesses his 12 busts of Algerians. Others of his notable works are statues of Arabian women and fellows in onyx and bronze, polychromatic busts of a Negro of Timbuctoo and an African Venus, and a statue of a young sculptor (Gk) of the is. of Tinos.

Cordier, or Corderius, Mathurin (c. 1480-1564), Fr. schoolmaster, for some time a teacher at the college of Navarre, Paris, where Calvin was his pupil, but taught for most of his life at Geneva, having embraced Calvin's religious views. He had a special gift for instructing children, and his graduated dialogues for beginners in Lat., entitled *Colloquiorum scholasticorum libri quatuor*, were still used in the school-room three centuries after his death. In his *De corrupti sermonis emendatione* he attacked what was called the *Latin de cuisine*, whilst a Lat. grammar and *Miroir de la jeunesse pour la former à bonnes mœurs et à civilité de vie* were both written for young people.

Cordierite, a complex aluminium and silicon ore with the chemical formula $4(\text{Mg, Fe})\text{O} \cdot 4\text{Al}_2\text{O}_3 \cdot 10\text{SiO}_2 \cdot \text{H}_2\text{O}$. It is rhombic, has a sp. gr. of 2.6, and a hardness of 7 to 7.5.

Cordilleras (Sp. 'chains'), name applied

to the mt systems of N., S., and central America; the C. of N. America being the Rocky Mts, and those of S. America the Andes.

Cordite, smokeless propellant used in the Brit. and other armies. It was introduced by Sir Frederick Abel; Nobel, the Swedish chemist, claimed that his patents covered the substance, but the claim was disallowed after a series of lawsuits in 1894-5. The propellant prepared in 1891 consisted of 58 per cent nitro-glycerine (q.v.), 37 per cent of gun cotton (q.v.), and 5 per cent mineral jelly or vaseline, and was known as M.J., of which there have been many variants with small variations in composition and ingredients. Gun cotton and nitro-glycerine are mixed in incorporating machines together with acetone which gelatinises the gun cotton; mineral jelly (vaseline) is added as a stabilising agent. The gelatinised dough is extruded through dies into cords of various cross-section sizes and shapes and perforations according to the ballistic requirements. The acetone is evaporated off in stoves. These C.s have now been largely replaced by solventless C.s in which M.J. is replaced by centralite, which dispenses with the use of a volatile solvent in manuf., and imparts a greater degree of storage stability to the C. In addition, small arms or rifle powder usually consists of gelatinised nitro-cellulose (q.v.) without the addition of nitro-glycerine. C. has good propellant properties and is generally safe to handle. If ignited in the open air it burns; it may be subjected to considerable shock without detonating, e.g. bullets fired through packages of C. fail to explode it. It is waterproof and is unaffected by climatic changes; it remains unaltered for a considerable time, even when kept in contact with metallic envelopes. These properties make it a valuable military propellant, as with suitable precautions it is safe for transport and storage for many years. It is customary for C. stored in magazines to be tested for chemical stability at regular intervals and its use to be limited to a certain number of years in accordance with these tests, after which it is destroyed. See EXPLOSIVES.

Cordoba, Alaska, see CORDOVA.

Córdoba (Eng. **Cordova**): 1. Sp. prov., in Andalucía (q.v.). It is watered by the Guadalquivir (q.v.), and its tribs. the Guadato, Benbézar, and Guadajoz, and contains part of the Sierra Morena (q.v.). The plains produce cereals, vines, olives, fruits, and beans; the mt slopes pasture cattle and horses. Lead, copper, and coal are mined. Area 5300 sq. m. Pop. 787,200.

2. (Rom. **Corduba**) Sp. city, cap. of the prov. of C., on the Guadalquivir. Founded in the 2nd cent. by the Romans, under the Moors it developed into a great city, and was the cap. of Moorish Spain after 756. In the 10th cent. it was one of the foremost centres of art and learning in Europe. Ferdinand III (q.v.) of León and Castile took it from the Moors in 1236. C., with its old walls, narrow streets, tall houses, and gardens, preserves a great

deal of its anct character. It has numerous fine churches and mansions, and a notable Rom. and Moorish bridge. The greatest treasure of the city, however, is the wonderful mosque, now the cathedral, built in the 8th-10th cents. This immense temple, 742 ft in length and 472 ft in width, containing 19 aisles, the arches of which are supported by nearly one thousand richly-coloured pillars, is probably the finest Moorish building in Spain. C. was once celebrated for its goat leather, whence *cordovan* and *cordwainer* (q.v.). Its manufs. include textiles and silverware, and it has a large commerce in agric. produce, wine, oil, and lead. Seneca (q.v.) was b. here. Pop. 171,500.

Córdoba: 1. Central prov. of the Argentine Rep., having an area of nearly 65,000 sq. m., consisting mostly of pampa land. In the W. the Sierra de C. and de Pocho rise sometimes to over 6600 ft, but the rest of the state is a plateau sloping down toward the E. Four of the five rivers, Primero, Segundo, Tercero, Cuarto, and Quinto, which flow from the W.

in 1821) confirmed Mexican independence. Pop. 17,900.

Cordon, line of military posts or sentries placed around a dist. or tn to prevent any communication between it and the country beyond. When it is used to prevent a disease from spreading it is called a *C. sanitaire*.

Cordon Bleu originally referred to the blue ribbon of the knight's grand cross of the order of the Holy Spirit, the first order of the Bourbon kings. To-day the term is humorously applied to good chefs. Properly it refers only to women cooks.

Cordova, see CÓRDOBA.

Cordova, tn in Alaska, U.S.A., formerly the terminus of the Copper R. and NW. railway serving a copper-producing region, including the Kennicott mines. Pop. 1140.

Cordovan, **Cordwain** or **Crup**, vegetable-tanned, curried shoe leather made from a special part of a horse hide known as the shell (a kidney-shaped, very compact layer below the surface of the skin which is only to be found on the back of equine animals). Originally C. was a high class.



INTERIOR OF CORDOBA CATHEDRAL (formerly a mosque)

succeed in reaching the E. limits. The prin. products are wheat, maize, flax, linseed, hay, flour, cattle, hides, and marble. Pop. (1955) 1,792,555.

2. Cap. of the above prov. and third largest city of the Argentine Rep., c. 435 m. NW. of Buenos Aires. Founded in 1573, its early growth was due to the driving of cattle from the Argentine pastures to the mining centres of the Andes. The local industries include State car and aero works, leather goods, textiles, glass, frozen meat, dairy products, confectionery, etc. There are also flour mills, foundries, marble works, tanneries, and paper mills. C. is a centre of culture. There is an important univ. (founded 1613), and the national observatory is one of sev. unusually fine buildings, including the National Academy of Sciences and the National Meteorological Bureau; there is an 18th-cent. cathedral, and a splendid museum. Pop. 351,600.

3. City of Veracruz state, E. Mexico, 3040 ft above the sea, in a fertile valley with coffee plantations, 55 m. WSW. of Veracruz. The treaty of C. (signed here

very flexible goatskin shoe leather originating in Cordova, from which it obtained its name.

Corduba, see CÓRDOBA.

Corduroy, cotton material made like a ribbed velvet. The fabric has cords running the length of the cloth, these cords or ribs being produced by a weft pile. It is generally all cotton, but may be made with a rayon pile for women's dress materials. A coarse heavy make is used for workmen's suits, for riding breeches, or for upholstery.

Corduroy Road, term used to designate a road which is formed of tree trunks or logs laid side by side in a transverse direction. Such roads are used chiefly in America, when a marshy piece of land has to be negotiated as a more or less temporary expedient. The origin of the term is the similarity of design of such a road to a piece of corduroy, in which the ribs run in similar fashion.

Cordwainer originally, in Sp., It., and O.F., signified a maker of, or dealer in, Cordovan leather, and thence in later Fr., a shoemaker. It is now obsolete, but

survives as the name of the trade-guild or company of shoemakers; it is also used by trade unions to include all branches of the trade.

Core, internal mould which forms the interior of a cylinder, tube, pipe, or other hollow casting. The C. is made in a C.-box, and has projecting portions known as C.-prints, which rest in the prints of the mould. The model from which the object is cast is solid, and makes an impression, partly in the cope and partly in the drag. When the pattern is removed the C. is laid in its place, the projecting portions resting in the recesses made by the pattern prints. When the metal has been poured around the space and then cooled, the C. is broken out, leaving the casting hollow. To prevent the formation of blow-holes, the material of the C. must be porous, and vents should be provided to allow gases to escape from the interior of the mould.

Corea, see KOREA.

Coregonus, or **Whitefish**, genus of fishes in the Salmonidae, and usually to be found represented in lakes. Their scales are large and silvery, the teeth are either minute or absent, and the height or front of the first dorsal is greater than its breadth. *C. oxyrinchus*, the houting, is a native of N. Europe; *C. pollan* is the pollan found in Irish loughs; *C. clupeoides* is the powan; the Welsh gwyniad (or schilly of Ulsterwater) is *C. clupeoides pennanti*; the powan and gwyniad are both found in the Eng. lakes, in Loch Lomond, and in lakes in Wales. The vendace (*C. raudius*) is found in the lake of Lochmaben in Scotland, and *C. vandensis gracilior* is found in Derwentwater.

Corelli, Arcangelo (1653-1713), violinist and composer, b. at Fusignano. He studied at Faenza and Bologna. Visits to France and Germany are reported, though uncertain, but he was settled in Rome by 1685. He met Handel there in 1707. Living at a time when the viol was yielding to the violin, C. was the first outstanding violinist and composer of music for that instrument, as well as teacher. His *Concerti grossi*, five books of twelve concertos each (short suites of non-dance pieces), are for two violins, cello, and harpsichord. They were only pub. shortly after his death, but 5 sets of sonatas appeared between 1681 and 1700.

Corelli, Marie (1855-1924), novelist, daughter of Charles Mackay (q.v.) by Ellen Mills, who became his second wife; at his death his son Eric was constituted her guardian, and he sent her to a Fr. convent to be educ. Her education was framed with a view to a musical career, but on her return home she wrote in 1886 a story entitled *A Romance of Two Worlds*. This was so successful that the idea of a musical career was abandoned for the writing of novels, all of which were immensely popular. No writer of her day (unless it was Hall Caine) had a larger number of readers. The critics invariably fell foul of her work, and for many years no copies of her novels were sent for review. The reason for her success lay not in the excellence of her work, but in the

fact that it met so exactly the popular taste. Her chief novels are *Vendetta*, 1886; *Thelma*, 1887; *Ardath*, 1889; *The Soul of Lilith*, 1892; *Barabbas*, 1893; *The Sorrows of Salam*, 1895; *The Mighty Atom*, 1896; *Temporal Power*, 1902; *Holy Orders*, 1908; *The Life Everlasting*, 1911; *Eyes of the Sea*, 1917; *The Secret Power* 1921. *Poems*, ed. by B. Vyver, 1925. See K. Carr *Miss Marie Corelli*, 1901; B. Vyver, *Memoirs of Marie Corelli*, 1930; lives by G. Bullock, 1940, and E. Bigland, 1953.

Corentijne, see COURANTYNE

Corenzio-Belisario (1558 or 1560-1643), Gk artist, b. in the prov. of Achaia. Became a pupil of Tintoretto at Venice. Settled at Naples, where he painted in fresco for the churches and was noted equally for his florid style and the terrorist methods by which he discouraged rivals.

Coreopsis (Gk. *koris*, a bug; *opsis*, resemblance), or **Ticksseed**, genus of plants of the family Compositae. It takes its name from the fact that the seeds are generally awned and slightly winged and look remarkably like an insect. There are many species found in the U.S.A. and Mexico, and a few in Africa. The flowers are cultivated for decoration.

Co-respondent, denotes either generally a co-defendant with one or more other parties to an appeal; or specially in the divorce court, any person cited in a suit for divorce or judicial separation, and charged with adultery with the spouse (respondent) against whom the petition is brought.

Corf, name formerly given in mining to a large and strong basket used in carrying ore, or coal, from the working-place to the surface. Tubs made of wood and iron are now used for this purpose; they are still sometimes termed corves. In fishing, a corf is the name given to a cage in which fish, particularly crabs, lobsters, etc., are kept alive in the water. Such corves are made from a large basket, or a box with holes in it.

Corfe Castle, vil. and par. in Dorset, England, situated in the E. div. of the Isle of Purbeck, 6½ m. SW. of Poole, and 21 m. ESE. of Dorchester. C. C. itself is situated on a high ridge, and is separated from the vil. by a ravine over which a bridge has been built. The castle dates from the 11th cent., though for a long time ascribed to Edgar; it was here on the site of the castle that King Edward the Martyr was murdered in 978 at the instance of his stepmother Elfrida. Many times the castle has been besieged; it was captured by the earl of Devonshire in Stephen's reign, and was twice besieged by the forces of the Parliament during the Civil war, being sacked after its capture in 1645. The prin. trade of the vil. is in fireclay and there is a milk collecting and distributing centre. Pop. 1400.

Corfu (Gk *Kerkyra*): 1. The second largest of the Ionian Is., of which the anc. name was Corcyra. In the 8th cent. bc it was colonised by the Corinthians and soon estab. an extensive commerce. Rivalry soon broke out with Corinth, from which C. became independent, and about 660 bc a battle was fought—the

most anct sea-fight on record—between the two cities. In 433 bc it allied with Athens and so caused the Peloponnesian war. Civil dissensions caused a decline in its power, and it was taken by the Romans in 229 bc. It was held by the Venetians from 1206 until 1797, when it was ceded to France. Russia and Turkey captured it in 1798, but gave it back to France in 1807. It was in the hands of the Brit. from 1815 to 1864 when it was incorporated in Greece. The surface of the is. is mountainous; the climate in summer is hot and dry, and in the winter rainy. C. has an area of 227 sq. m. and a pop. of about 105,000. Since Venetian times the chief exports have been olives and olive oil. On all sides there is luxurious vegetation, pears, figs, pomegranates, and flowers. The best Gk musicians come from C. The excellent roads are relics of the Eng. occupation. In 1916 the defeated Serbian army occupied C. which became the seat of the Serbian Gov. for the rest of the war. Over 25,000 Serbs d. there of typhus and cholera.

2. Chief tn. of the is. of C., famous for its harbour. The tn has few classical or medieval remains. On 27 Aug. 1923 the It. delegate on the Albanian Boundary Commission was found murdered, and Mussolini thereupon sent a fleet to C., which bombarded the dilapidated Venetian forts and killed 16 refugees and orphans. It., which was once universally understood, is no longer generally spoken. C. has no railway. Pop. 27,450.

Corgi, see WELSH CORGI.

Cori (formerly *Cora*), It. tn. in Lazio (q.v.), 12 m. N. of Latina (q.v.). It was once a tn of the Volsci (q.v.). During the Second World War there was severe damage. The tn has sev. anct churches, but is remarkable for its Rom. remains, which include temples, walls, and a bridge. There is an iron foundry, and there is a trade in agric. produce, olive oil, and wine. Pop. 7500.

Coria, Sp. tn in the prov. of Cáceres, on the Alagón. It has Rom. walls, almost intact, a Gothic cathedral, a 12th. cent. castle, and the palace of the dukes of Alba. Pop. 4800.

Coriander, or *Coriandrum sativum*, species of Umbelliferae which flourishes in Asia, America, and S. Europe. The plant is an ann., with a disagreeable smell of bed-bugs, but the globose fruit has a pleasant aroma when dried, and is used as an aromatic flavouring in confectionery and in the manuf. of liqueurs; in medicine it is used as a carminative.

Corigliano Calabro, It. tn. in Calabria (q.v.), near the gulf of Taranto, 26 m. N.E. of Cosenza (q.v.). It is a gloomy and badly built tn, but has a fine castle. Pop. 20,300.

Corinna (late 6th cent. bc), Gk lyric poetess, b. Tanagra in Boeotia. She wrote in her native dialect and was praised by Alexandrian critics. Pindar, whose work she had slighted, called her a 'Boeotian sow.' See E. Diehl, *Anthologia Lyrica Graeca*, 1949.

Corinth, anct city of Greece, lying between the gulf of C. on the W. and the gulf of Aegina on the E., 48 m. from

Athens. It is situated on the SW. end of the rocky isthmus of C., which connects the Peloponnesus with the mainland. Its citadel, the Acrocorinthus, was built on the N. slope of a steep mt. (1836 ft. high), with the famous fountain of Pirene nearby. The city had three harbours—Schoenus and Cenchræe on the Saronic Gulf, and Lechaëum at its opposite end in the gulf of C. C. enjoyed splendid advantages from its situation, and became the chief trading centre in anct times of E. and W. traffic. Its chief exports were the productions of ceramic art, and the inhab. also excelled in weaving and in metal-work. C. was supposed to have been founded by Sisyphus about 1350 bc, but did not come into prominence until after the Dorian conquest. It was ruled by an oligarchy from 748 till 655, when Cypselus became tyrant. Under his rule and that of his son, Periander, the



E. Buchanan

CORINTH, THE TEMPLE OF APOLLO

city increased in wealth and power, but in 581 the old constitution was restored. C. joined the Lacedaemonian league, incited the Peloponnesian war (431) upon Athens, and, on the fall of that city, united with it and Thebes against Sparta in the Corinthian war (395–387). It was occupied by the Macedonians until 243, and then joined the Achaean league. It was sacked and almost destroyed by the Romans under L. Mummius in 146. Its treasures of art were carried off to Rome, and for many years the city lay in ruins, until Julius Caesar rebuilt it in 46. During the Middle Ages it passed into the hands of the Venetians, from whom it was captured by Mohammed II. in 1458, and it remained in Turkish hands until 1858. In that year it was destroyed by an earthquake, and the new city was built 3 m. N.E. of the old site. At the time of its prosperity C. had numerous colonies including Syracuse, Apollonia, Corcyra, etc. The tn was notorious for its luxury

and licentiousness, and was beautifully laid out with gardens and fountains, statues and theatres. The ancient temple of Apollo, the theatre, the foundations of the Acrocorinthus, the Agora, and other important sites have been identified, and archaeological excavations have been undertaken by the American School of Classical Studies at Athens. The worship of Aphrodite prevailed in the city. The most celebrated Corinthians are Diogenes, the Cynic philosopher; Cleanthes and Cleophrantus, painters; and the statesmen Periander and Timoleon. At its height C. had a pop. of 300,000. It is now 5350. In the Second World War the liberating Brit. troops entered C. on 9-10 Oct. 1944.

Corinth, co. seat of Alcorn co., Mississippi, U.S.A., with foundries and machine shops. Owing to its position it played an important part in the W. campaigns of the Civil war. Pop. 9800.

Corinth (or **Lepanto**), **Gulf of**, separates the Peloponnese on the S. from Hellas on the N. Numerous small rivers run into the gulf, which communicates with the Gulf of Patras by the Strait of Lepanto. Earthquakes are very frequent, the seat of shock being generally between Patras and Poros. The gulf has a length of 75 m., and an average breadth of 15 m.

Corinth, Isthmus of, in Greece, unites the Peloponnese to Attica, between the gulfs of C. and Aegina. Remains of great antiquity have been discovered, including traces of the temple of Poseidon, and the Isthmian wall. A ship canal through the isthmus was begun in Mar. 1882, and completed in Aug. 1893. The canal is 3.7 m. in length, and has a width at bottom of 69 ft., at the surface of from 165 to 230 ft., and a minimum depth of 264 ft. The canal was destroyed by the Germans in the Second World War, but was repaired and brought into operation again in 1948. It was temporarily blocked by an earthquake in 1953. The new towns of Isthmia and Posidonia are situated at the SE. and NW. extremities of the canal respectively.

Corinthian Order, in architecture, *see* ORDERS OF ARCHITECTURE.

Corinthians, First and Second Epistles to the, written by St Paul to the Christian Church at Corinth, which he had established there during his stay of a year and a half. From internal evidence the first epistle was written in AD 56 or 57 from Ephesus, and the second epistle was written from Macedonia in AD 57 or 58. Two main reasons induced Paul to write the first epistle—information which he had received from members of the 'house of Chloe' (1 Cor. i. 11) about the condition of the Church in Corinth, and certain questions which he had received from that Church by Stephanas, Fortunatus, and Achaicus. Paul learned of religious factions and wrongs and abuses as prevalent at that time in Corinth; and he maintained that the Church had power to settle all disputes, both theological and civil. He condemned the factions and abuses in the Church, emphasising the unity of the Church as the Body of Christ, and its subordination to Him as its head. He also discussed and answered

the questions sent to him from Corinth—concerning marriage and celibacy, idolatry, the support of the ministry, public worship, institutions such as the Lord's Supper, spiritual gifts, and the resurrection. The second epistle is closely related to the first, and Paul determined to write it because of the good effect on the Corinthians of his first epistle. The Pauline authorship of 2 C., as in the case of 1 C., has been denied only by German professors, with a reputation to make. St Paul makes his salutation, mentions the Judaizers, and then gives a graphic account of his ministry as an apostle, its methods and its motives. He also describes how he waited for the coming of Titus from Corinth, and his joy at his arrival and the tidings which he brought; he exhorts the Christians to contribute to the collections for the saints in Jerusalem; and describes how the Judaizers assailed his position and authority as an apostle. Although their integrity has been questioned it is beyond doubt that both epistles are authentic, and they admirably display the character of their author. *See* commentaries by Kennedy, 1900; H. L. Goudge, *The Westminster Commentaries*, 1903 (1 Cor.), 1927 (2 Cor.); K. Lake, *Earlier Epistles of St Paul*, 1911; E. Evans, *The Clarendon Bible*, 1930; Allo, 1934, 1937; J. Moffatt and E. Evans, *New Testament Commentary series*, 1935, 1938.

Corinto, port in Chinandega dept., Nicaragua, 19 m. WNW. of León. It is in the SE. of Aserradores Is. on C. Bay, and is Nicaragua's prin. Pacific seaport, connected by rail with Managua, León, and Granada.

Coriolano, name of three engravers: *Coriolano, Cristoforo* (d. 1600), native of Nuremberg. He cut the very clever portraits of the second ed. of Vasari, pub. at Florence in 1568.

Coriolano, Giovanni Battista (c. 1590-1649) is thought to be the son of Cristoforo, but probably was his grandson. His cuts in wood are few, his work consisting chiefly of engravings and etchings on copper.

Coriolano, Bartolomeo (c. 1599-1676), also said to be the son of Cristoforo. He was b. at Bologna, and studied under Caracci. He executed some very effective prints in chiaroscuro. His prin. work is 'The Fall of the Giants,' after Guido (1638). He was granted a pension by Pope Urban VIII.

Coriolanus, Gaius or Gnaeus Marcius, hero of an early Rom. legend. His original name was Gaius or Gnaeus Marcius and he received his surname Coriolanus owing to his capture of Corioli from the Volscians. Banished from Rome by the commons in 491 BC, he fled to the Volscians, whose king, Attius Tullius, made him general of their army. He advanced against the Romans, and was only induced to lead back his army by the approach of Veturia, his mother, Volturna, his wife, and his two children. He returned to the Volscians, with whom he lived until his death. Some believed that the Volscians put him to death as a traitor. The story is told in Shakespeare's *Coriolanus*.

Corisco Bay, bay of the Gulf of Guinea, W. Africa, in the Bight of Biafra, extending from Cape Esteiras on the S. to Cape St. John on the N.

Corisco Island, small is. in Corisco Bay, belonging to Spain.

Cork, Earls of, see BOYLE.

Cork: 1. Maritime co. of the Rep. of I., prov. of Munster, the largest co. in I., with an area of 2880 sq. m. There are many fine harbours and bays, including (E. to W.) Youghal harbour, Ballycotton bay, Cork harbour, Kinsale harbour, Courtmacsherry harbour, Clonakilty bay, Rosscarbery bay, Glandore harbour, Roaring Water bay, Dumanus bay, and Bantry bay. It is intersected (W. to E.) by the riv. valleys of the Blackwater, Lee, and Bandon, which rise near the Cork-Kerry border and constitute the natural drainage for most of the co. The W. and NW. are rough and mountainous but elsewhere the co. is comparatively level. The highest point is in the Boggerah and Derrynasagart mts in the NW., rising to 2239 ft (Caherbarnagh). In the W. are Sliaibh Mish and Cahal mts, and in the SW. Shehy mt. The coast is irregular and deeply indented, particularly in the W., where the bays are bold and rocky. The only large lake is Lough Allua, on the upper Lee near Inchigeela. The climate is mild, the prevailing winds SW. and W. making the atmosphere warm and moist. Ann. rainfall is 40 in. in the city of C. and somewhat higher over the whole co. The ann. mean temp. is 50·9° F., and usually there is little snow. The scenery is bold and rugged in the W.; in the centre and N. are quiet, green valleys. There is excellent sea-bathing at many places along the coast. Bantry, Glengarriff, and Youghal are favourite tourist resorts. There are large salmon industries at Blackrock near C. city, and net fishing in C. harbour, deep-sea fishing at Ballycotton, Youghal, Kinsale, and Bantry bay, the game fishing at Ballycotton being among the finest in the world; rod-angling for salmon and trout on a large scale in the Lee, Blackwater, and Bandon rivs. and their tribs., and white and brown trout fishing, particularly in the llen, Glengarriff, Ouvane, and Coonhola rivs. Is. off the coast include Sherkin, Clear, Dursey, and Bere, while in C. harbour are many is., including Great and Little Is., Haulbowline Is., and Spike Is. The geological formation of the co. consists of limestone and redstone or brownstone; in the valleys there is a considerable mixture of soil constituents owing to weathering and the carrying down of brownstone detritus, hence there is much variety in the soils and this is marked by the system of agriculture and crops grown in different dists. The prin. crops are sugar beet, wheat, barley, potatoes, oats, and flax. Cattle are raised extensively, and the meat and creamery industries are the prin. ones in the co. Pigs have increased in number in recent years, and sheep and poultry are important. The co. is rich in Christian and pre-Christian antiquities. There are round towers at Cloyno and Kinneigh, over 40 eccles. foundations, and

over 300 castles; among the more ant remains are forts, megalithic tombs, stone circles, and ogham and inscribed stones. Blarney Castle is the best-known castle because of the legend attached to the Blarney Stone under the parapet at the top of the tower. Spenser wrote his *Faerie Queen* at Kilcolman Castle near Doneraile. The co. is administered by a co. council and co. manager, 9 of the tns having independent urban councils. There are many important educational institutions in C., including agric. colleges and vocational schools. Public libraries are provided at all the chief tns and in the rural areas. Pop., including the co. bor., 343,200.

2. City and seaport of co. C., Rep. of I., situated on the R. Lee at the head of the splendid inlet known as C. Harbour, 13 m. from the sea. Founded by St Finnbar in the 7th cent. on the site of a more ant foundation, the city is the largest in S. I. and one of the most important industrial and trading centres in the country. The nucleus of C. is built on an is. formed by 2 arms of the riv., known as N. and S. Channels, but the city has grown extensively, taking in the hills to N. and S. and the level ground E. and W. Large suburbs have developed, particularly since 1946. The city has many fine buildings, almost all in local limestone of a rather unusual whiteness, and these, with the cut limestone quays, give it a distinctively modern appearance, while the terraced hills lend it a continental air. The only monument of the Middle Ages still standing is the tower of the Red Abbey (Augustinian), and most of the interesting buildings date from within the last 200 years. The Protestant cathedral (St Finnbar's), erected in 1865 on the site of many older churches and possibly of the original church founded by St Finnbar, is an impressive building in Fr. Gothic. St Mary's Rom. Catholic pro-cathedral in pointed Gothic was built in 1808 on the site of an older church. C. has many other interesting churches, including St Ann's Shandon, built in 1722 to a rather eccentric design, world-famous for its bells (immortalised in the song *The Bells of Shandon*); SS. Peter and Paul's (1866), regarded as one of the best of Pugin's works; Holy Trinity (Capuchin Fathers), erected in 1832 to commemorate Father Matthew, the Apostle of Temperance; St Finnbar's South (1766), which contains the 'Dead Christ' by Hogan, the noted C. sculptor; St Patrick's (1836); Christ the King (1931), at Turner's Cross, a unique example of modern functional architecture; the Augustinian church in Washington Street; the new Franciscan church (1953) in Liberty Street, the finest modern interpretation of the Byzantine style in Europe to-day; the Honan Chapel (1916) in the univ. grounds, modelled on the Hiberno-Romanesque 12th-cent. Cormac's Chapel at Cashel, a gem in design and decoration; and St Vincent's at Sunday's Well. The customs house (1818), occupying a fine position overlooking the riv., the Courthouse (1835), City Hall (1929), C. Savings Bank

(1842), and the former Mansion House (now the Mercy Hospital), erected in 1767, are among the more notable buildings, while the giant grain silos and the electrical power station on the lower quays are fine examples of modern architecture.

The city was originally walled by the Northmen, and later by the Anglo-Normans, and suffered many burnings and sieges in its hist. Until the end of the 13th cent. C. was more celebrated as a seat of learning than as a centre of trade, and despite its prominence to-day in industry and commerce it has remained faithful to its tradition of learning. Univ. College is a constituent college of the National Univ. of I., and has over 1000 students; its library is one of the most important in the country. There are many primary, secondary, and vocational schools, a school of music, a school of art, art gallery, public museum, and public library. The harbour is the most important on the S. coast of I.; it is studded with is., its shores are well wooded, and it is most picturesque. The lower harbour at Cobh is available for all classes of vessels at all states of the tide, and with its great, sheltered, land-locked basin is one of the finest, safest, and most commodious of natural harbours, where trans-Atlantic liners embark and disembark passengers; the upper harbour at C. provides berthage for vessels drawing up to 27 ft. of water on all tides. Substantial dry-dock facilities are available at Rushbrooke, near Cobh. The harbour is administered by a harbour board, comprised of members of the local authorities and the commercial, employers' and labour organisations. Excellent crane facilities are provided, and most of the quays have rail connection. The prin. imports are coal, feeding stuffs, fertilisers, fruit, maize, machinery, motor car spirit, motor car parts, oils and oil fuel, phosphate rock, pollard, pyrites, rubber, salt, steel, timber, and wheat. The prin. exports are bacon, butter, burnt ore, chilled meat, clay, confectionery, eggs, malt, meat, livestock, provisions, and poultry. The chief local industries are bacon, boots and shoes, brewing and distilling, margarine, metal products, motor cars, trucks and tractors, paints, pottery, soap and candles, steel, tyres and rubber goods, and ship repairing. C. is governed by a lord mayor, aldermen and councillors, and a city manager. It was the first local authority in I. to have the managerial system, later applied to all local authorities in the Rep. of I. Pop. of co. bor. 75,300.

Cork, tissue or layer of the bark of the C. oak (*Quercus suber*) which grows in Spain, Portugal, and some dists. of Europe bordering the Mediterranean. A tree first yields a supply when it is about 20 years old, and supplies are obtained about every 10 years. The first production is of little value, but each successive supply increases in value. The C. is stripped from the tree by means of incisions made in longitudinal and transverse directions by a curved knife with a

handle at each end. The pieces thus detached are soaked in water, scraped, washed, pressed flat, and dried. They are then placed over a coal fire which conceals blemishes and blackens and makes smooth the surface. The elasticity of C. makes it useful for stopping bottles and casks; its lightness for life-belts, artificial logs, and the floats of nets; and its impermeability to water for the soles of shoes. The uses of C. were known to the ancients—Pliny mentions them. Phutarch says that Pontius Cominius swam the Tiber by the help of pieces of C., and the ancients Egyptians made coffins of it. The use of C., however, for stopping glass bottles was not known until the 15th cent. Sp. black is made by burning the parings of C., and C. waste is employed in the manuf. of linoleum. See FORESTRY.

'Cork Examiner', Irish prov. newspaper, estab. in 1841, pub. in Cork, and having a wide area of influence. Substantial coverage is given to contemporary affairs—home and foreign—with special emphasis on agriculture. Progressive in outlook, its leading articles are virile and pertinent. Associated newspapers are the *Evening Echo* and *Cork Weekly Examiner*.

Corleone, tn in Sicily (q.v.), on a hill near a source of the Belice R., 21 m. S. of Palermo (q.v.). Pop. 16,200.

Cormac MacArt, or **Cormac na Cuinn**, King of Ireland from 218 to 254, was grandson of Conn Cead Cathach (Conn of the Hundred Fights). He reigned in great splendour, and was a great patron of art and learning. Schools of military science, law, and literature are said to have been founded by him at Tara (q.v.). Some of his sayings are preserved in the *Book of Aicill*.

Cormac MacCulinnán (836-908), King (901-8) of Munster in Ireland, a descendant of Angus. He reunited the offices of king and bishop, being bishop of Cashel. During his reign the country was troubled by the invasions of the Danes, and it was in resisting these that C. fell at the battle of Moy Albe. He wrote a chronicle in Irish verse, *The Psalter of Cashel*, and an etymological glossary of the Irish language, called *The Glossary of Cormac*.

Cormenin, Louis Marie de la Haye, Vicomte de (1788-1868), Fr. politician. He was appointed auditor to Napoleon's Council of State; in 1814 he rallied to the monarchist cause, and after the Hundred Days was made master of requests at the Council of State at the restoration of the Bourbons. His political views were moderately radical, however, and he was constantly in opposition to the monarchy. He was made a member of Napoleon III's Council of State, 1852. His *Droit administratif*, 1821, for the first time collected the scattered fragments of administrative law, and gave shape to them.

Cormons, lt. mrkt tn, in Friuli-Venezia Giulia (q.v.), 7 m. W. of Gorizia (q.v.). It produces good wine. Pop. 6500.

Cormontaigne, Louis de (1697-1752), Fr. military engineer who served in the war of the Sp. Succession. He entered the engineers in 1715, and was put in charge of new works—Forts Moselle and Bellecroix at Metz—which he had designed.

Cormorant, *Phalacrocorax*, large web-footed bird of the order Pelecaniformes. The *C. P. carbo* has a bright shiny head and neck, with bluish-black feathers, sprinkled with white. The general colour above is a greenish black, the throat white, and the bill and feet are dark grey. It is found in all parts of the world in coastal regions. This bird is notorious for its voracious appetite. It collects the food in a kind of pouch formed by the dilatable skin at the front of its throat. C.s feed entirely on fish, which they catch by swimming and diving under the water, sometimes to a considerable depth. There are more than 30 species, among which are the familiar shag, or green cormorant (*P. graculus*), and the small S. European *P. pygmaeus*, which is a fresh-water bird. The guanay C. of the Peruvian coast is the main producer of the guano of those regions.

Corn, collective term which is applied to the grain or seed of any cereal or farinaceous plant as a produce of agriculture. In England it is chiefly applied to wheat, in Scotland to oats, and in America to maize. See BARLEY; MAIZE; OATS; RYE; WHEAT, etc.

Corn, localised thickening of the epidermis (see SKIN), generally on the toes, arising from continued pressure. C.s are either hard and dry when they are situated externally, or soft when they occur between the toes, and are often very painful. A hard corn begins by the thickening of the skin; as the pressure increases so does the irritation and thickening until the core of the corn is formed. Horses, as well as men, are subject to C.s, usually caused by the animal being badly shod (see HORSE, DISEASES).

Corn, Indian, see MAIZE.

Corn-cockle, or *Agrostemma* (synonym *Lycnis*) *githago*, pretty ann. herb, family Caryophyllaceae, a common but decreasing weed of cornfields. The seeds are said to be poisonous, and deleterious in wheat when milled.

Corn-flour, starchy ingredient of puddings, sauces, etc., obtained from finely ground maize or Indian corn. Also denotes flour made of rice or any other grain. The starchy granules, after separation from the germ and gluten, are carefully selected and purified. The germ, after its oil has been extracted, is used for cattle food, as is also the residue of coarser constituents of the granules. See MAIZE.

Corn Laws, name given to certain statutes passed in the Brit. Parliament relating to the exportation and importation of grain. Laws regulating trade in corn date as far back as the reign of Edward III. In the reign of Henry VI, with the object of securing a plentiful and cheap supply for home consumption, no corn was allowed out of the country. In the reign of Elizabeth I little advantage was taken of the new law providing free importation, and practically all the corn grown remained in the country. Towards the end of the 17th cent. the legislators, who, being generally landowners, had the

interests of agriculture at heart, conceived a new plan of promoting home production. Exportation was now encouraged freely by bounties, but the price of corn remained low and tended to decrease. In 1773 Burke passed an Act which exacted the small duty of 6d. on foreign corn, which might be imported when the home price was at or above 48s. a quarter. The exportation with its corresponding bounty was to cease when the home price was at or above 44s. This legislation was very beneficial to the rising manufacturing classes, but in 1791 it was repealed in the interest of the landowners and a prohibitive duty imposed when corn was at or below 50s. In 1815 Parliament enacted that foreign corn might not be imported into Great Britain until the home price of wheat was 80s. a quarter. The law caused great economic distress. In 1827 and 1828 more liberal measures were brought before the House by Canning and Charles Grant. Agriculturists were gradually being convinced of the fact that the C. L. were based on a wrong principle, and that the interests of the general community were being sacrificed to the supposed interests of the landowners. England was still suffering from the effects of the Napoleonic war, and a series of bad harvests (1816 and 1837-42) increased the distress. Robert Peel attempted to effect a compromise by introducing a system of a sliding scale in the duties, depending on the rise and fall in the price of wheat. In 1836 an agitation was started in Manchester for the repeal of the C. L. and in the following year the Anti-Corn Law League was formed. Mr Cobden and Mr Bright were among the foremost of the advocates of Free Trade. The country was inundated with pamphlets on both sides of the question. In 1843 corn was allowed to be imported, at a practically negligible duty, from Canada, and before long it happened that Amer. corn came into England, through Canada, at the same rates. Peel, who was himself willing to abandon protection, could not hold his ministry together and resigned. He was obliged, however, to take office again, and in 1846 declared himself a convert to Free Trade. A fixed but reduced duty was placed on corn for 3 years, after which the C. L. were to be abolished. The price of corn did not fall greatly with the repeal of the C. L., nor did agriculture appear to suffer any great loss, while the country prospered in its industries. See ANTI-CORN LAW LEAGUE; PEELE; BRIGHT; COBDEN; CHAMBERLAIN; FREE TRADE; PROTECTION. Consult the text of the C. L. in *British Statutes* (16 vols), London, 1882-1900; W. T. Thornton, *Historical Summary of the Corn Laws*, 1841; and J. S. Nicholson, *History of the Corn Laws*, 1904; C. R. Fay, *Corn Laws and Social England*, 1933.

Cornaceae, family of about 120 dicotyledonous species, chiefly shrubs with usually opposite, simple leaves, small flowers in heads, 4 or 5 parted, with inferior ovary. Genera include *Aucuba*, *Cornus*, *Corokia*, *Curtisia*, *Davidia*, *Griselinia*.

Cornaro, Caterina (1454-1510), Queen of Cyprus, member of a famous Venetian family who married in 1472 Jacques de Lusignan, King of Cyprus. Caterina was left a widow in 1473; she governed for her son, Jacques III, until his death in 1475, when the Venetian Senate decreed that she should abdicate in favour of the republic. This event actually took place in 1489, when it was made the occasion of a solemn ceremonial. Caterina retired to the castle of Asolo, near Venice, where she lived till her death; she was always surrounded by a 'court' of poets and artists. Her beauty and wit were famous, and her portrait was painted by many artists, including Palma the elder and Titian.

Cornaro, Luigi (1467-1566), Venetian nobleman, whose weak constitution was further weakened by his intemperance in eating and drinking. When he was 40 he gave up these excesses on the advice of his physicians and began to lead a regular and abstemious life, and within a year his health was in a perfect condition, and his spirits greatly recovered. In his eighty-first year he wrote *Discorsi sulla vita sobria* (*The Advantages of a Temperate Life*), which was pub. in Italy in the vernacular tongue, and in Lat. It was trans. into most European languages, and was at one time a very popular book. The best Eng. trans. is that dated 1779. C. also wrote three other treatises on the same subject.

Cornbrash (geology), sub-div. of rocks occurring at the upper layer of the Lower Oolite rocks of England, and the most persistent stratum of the series, extending as it does right across the country from Dorset to the Yorks coast. It is a thin-bedded rubbly limestone, consisting of clays and calcareous sandstones, which pass into the forest marble, as at Bradford, or into beds of clay. It contains many echinodermata and brachiopods.

Corncrake, Landrail, or *Crex crex*, species of Rallidae which is well known in Britain on account of its unmelodious voice. The general colour of the bird is a

dullish brown, the bill and tail are short, the legs long and powerful, and the toes have sharp claws. It has a wide geographical range which extends throughout the milder regions of all the continents, and it often spends the summer in Britain, haunting dry meadows. It can swim and run easily, but its flight is heavy.

Cornea, *see* EYE.

Corneille, Pierre (1606-84), Fr. tragic dramatist, b. Rouen. His father was a legal official, and he was trained for the Bar. He tried for some time to obtain a practice at Rouen, and came to Paris in 1629. Here he produced the comedy of *Médite*, which had already been played at Rouen. This was highly successful, largely on account of the extreme ingenuity and complexity of the intrigue, and was followed by *Cilianeire*, *La Veure*, *La Galerie du palais*, *La Suivante*, and *La Place royale*. In 1631 C. was presented to Richelieu, who made him one of his five authors, a group of dramatists whom the cardinal kept to carry out plays for which he himself supplied the plot. But he had not sufficiently the spirit of a follower to remain in this position, and he was soon dismissed. At this period C. became acquainted with Sp. literature, and this marks the starting point of his greatness. In 1635 appeared *Médée*, a tragedy which showed a marked improvement on his earlier work; but in 1636 the *Cid*, based on a drama by Guilhem de Castro, took Paris by storm. While following the Sp. poet closely in detail, C. shows in his treatment the spirit which was to dominate Fr. tragedy. The piece is classically conceived, the hardness and savagery of the Sp. are removed, the action is simplified and concentrated, and the whole drama is changed from the external world to the internal world of the heart. The greater number of the Fr. critics, represented by the recently founded Academy, and instigated by Richelieu, condemned the play severely, on account of its incomplete observance of classical rule. However, all their force was unable to change the popular verdict. As Boileau says:

'En vain contre le *Cid* un ministre se ligue,

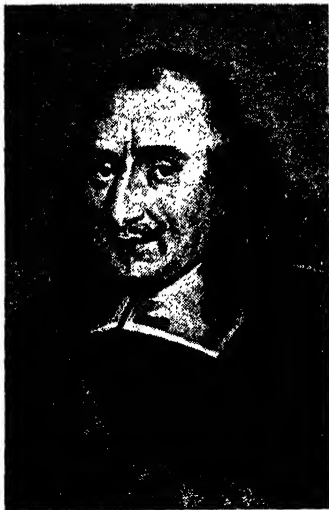
Tout Paris pour Chimène a les yeux de Rodrigue';

and the phrase 'beau comme le *Cid*' passed into the language. For three years C. remained in retirement, and when in 1639 he reappeared with *Horace* and *Cinna*, he had learned the lesson of strict submission to the unities. Then came *Polyeucte*, 1640, in which a Christian saint takes the place of hero, giving one of C.'s noblest tragedies; *La Mort de Pompée*, 1643; *Rodogune*, 1646; *Héraclius*, 1647. In 1643 had appeared *Le Menteur*, the comedy which first shows the style which Molière was to perfect. In 1647 C. was elected a member of the Academy, and produced *Andromède*, *Don Sanche d'Aragon*, and *Nicomède*. In 1652 the failure of *Pertharite* drove C. from the stage, and he remained in retirement for six years, during which he commenced a Fr. verse trans. of the *Imitatio Christi*. In 1659



CORNCRAKE

he returned to the stage with *Oedipe*, feeling confident that his powers were unimpaired. This was an illusion, and henceforth all his works show a decline. In 1674 his dramatic career ended with *Sertorius*. For ten years the poet remained silent, suffering from the death of his two sons and from domestic troubles, suffering still more from the sense of his vanished genius, and the knowledge that he was abandoned and despised by a new generation. At the age of seventy-eight he d. in Paris. C. is the creator of the Fr. tragic drama. 'You know,' writes Racine in the eulogy of C. which he read before the Academy, 'in what a condition the stage was when he began to write. What disorder, what irregularity! . . .



PIERRE CORNEILLE
Engraving after a painting by
C. Lebrun.

All the rules of art, and even those of decency and decorum, broken everywhere. In this infancy, or better in this chaos, of our dramatic poetry, C., after having for some time sought the right path and struggled against the bad taste of his day, inspired by extraordinary genius and helped by the study of the ancients, at last brought reason upon the stage, but reason, indeed, adorned with all the pomp, with all the ornaments, which our language can provide. He had the happy gift of reconciling the credible and the marvellous, and left far behind him all the rivals there were.' While the drama of C. has not the freedom of the romantic type, it is by no means so strictly classical as that of Racine. C. accepted the unities, but only with difficulty. His great work is the creation of the drama of the

soul. His characters are exalted and superhuman, always masters of themselves and their emotions. Love he treats as a weakness, the will as the sole source of action. Stoicism and devotion to duty is the lesson he teaches. See C. A. Sainte-Beuve, *Portraits littéraires*, 1844; F. P. G. Guizot, *Corneille et son temps*, 1852; F. Brunetière, *Époques du théâtre français*, 1892; L. Batiffol, *Richelieu et Corneille*, 1936; M. Turrell, *The Classical Moment*, 1947; O. Nadal, *Le Sentiment de l'amour dans l'œuvre de Corneille*, 1948.

Corneille, Thomas (1625-1709), Fr. playwright, younger brother of Pierre C., twenty years his junior, b. Rouen. He distinguished himself in early life by a comedy in Lat. verse, which he composed while he was at the Jesuits' college. On the death of his brother, Pierre, Thomas took his place in the Academy, contributed to the *Dictionnaire*, and afterwards became a member of the Academy of Inscriptions. Altogether he wrote forty-two tragedies and comedies. His earlier works are imitations of the Sp. dramatists, the chief being *Le Cédier de soi-même*, 1655; and *Le Baron d'Albikrac*, 1668. Of his comedies the best known are *Les Dames renégées*, 1695, in collaboration with Visé; *La Devincesse*, 1679; and an adaptation from Molière's *Festin de pierre*, 1677. He was, however, made famous by his dramas *Timocrate*, 1656; *La Mort d'Annibal*, 1669; *Ariane*, 1672; and *Le Comte d'Essex*, 1678. See G. Reynier, *Thomas Corneille, sa vie, ses ouvrages*, 1892.

Cornel, see CORNUS.

Cornelia: 1. Daughter of Publius Scipio Africanus. She married Tiberius Sempronius Gracchus, and was the mother of Tiberius and Caius Gracchus, the reformers. In her were exemplified the virtues of the best type of Rom. matron, and a statue was erected to her during her lifetime, with the inscription 'Cornelia mater Gracchorum.' See Valerius Maximus, 4, c. 4; Cicero in *Brut.* 58, and *De Claris Oratoribus*, 58, etc.

2. Daughter of Metellus Scipio; she married first Publius Crassus, and afterwards Pompey, by whose influence her father obtained the consulship. She was the helpless witness of her husband's murder, and it is said that he attributed all his ill fortune to her unlucky influence.

Cornelian, see CORNELIAN.

Cornelisz, Cornelis (**Cornelis van Haarlem**) (1562-1638), Dutch historical and portrait painter, b. Haarlem. He received lessons in his youth from Pieter Aertzen and later from Porbus and Coignot. His 'Banquet of the Archers' Guild' (1583) is in the Haarlem Museum; and his 'Massacre of the Innocents' (1590) is in Amsterdam. A well-known example of his art is 'The Deluge', painted for the earl of Leicester.

Cornelisz, Jakob, or **Cornelisz van Oostzanen**, 15th-16th-cent. Dutch painter, whose works are represented in museums at The Hague, Berlin, Antwerp, and Vienna.

Cornelisz, Lucas (1495-c. 1552), Dutch subject and portrait painter, b. Leyden. He received instruction in art from his father, Cornelis Engelbrechtz, who was the tutor of Lucas van Leyden. Owing

to poverty he was forced to act as cook, but on going to England, about 1527, he was made royal painter by Henry VIII. Afterwards he was employed at the court of Ferrara in Italy from 1535.

Cornelius, centurion of the Italian cohort stationed at Caesarea. In consequence of a special revelation Peter received him into the Christian Church by baptism (Acts xi). This is generally regarded as being the beginning of the admission of Gentiles into the Christian Church. But the baptism of the Ethiopian eunuch (Acts viii. 38) may have been prior to this, and C. was already a proselyte. According to legend C. founded a church at Caesarea and became bishop of Scamandros.

Cornelius, Peter (1824-74), Ger. author and musician, nephew of Peter von C. (q.v.). His opera entitled *The Barber of Bagdad* was produced at Weimar in 1858 under the auspices of Liszt, who was his friend. The work was hissed off the stage, and Liszt resigned his post as conductor in consequence. C. went to Vienna and occupied himself in writing songs and poems, being very much under Wagner's influence. His second opera, *Der Cid*, was produced at Weimar in 1865. For the last decade of his life he was at work on his opera *Günther* and other compositions. In 1867 he became teacher of rhetoric and harmony at the school of music, Munich. Many of his original poems and trans. from the Fr. were highly esteemed, and among his songs the *Weihnachtslieder* and *Bräutlieder* are especially noteworthy.

Cornelius, Peter von (1783-1867), celebrated Ger. painter, b. Düsseldorf. He early exhibited a taste for art. At the early age of 19 he was commissioned to paint the cupola of the church of Rouss. He visited Rome, and illustrated Goethe's *Faust* in a manner worthy of the subject. In 1808 he went to Frankfurt, where he was well received, and in 1811 to Rome, where in conjunction with Veit, Overbeck, and others he founded practically a new school of Ger. art and revived fresco painting. In 1824 he was made director of the Academy of Munich; in 1841 he was made a member of the Academy of Berlin. He exhibited at Paris in 1855 4 cartoons of the decorations of the Campo Santo, or royal mausoleum, at Berlin, which were widely admired. The frescoes in the Bartholdy Palace at Rome, representing the hist. of Joseph, are among his best works. Among his other works may be mentioned his great national picture 'Cycle of the Nibelungen,' his fresco illustrating Tasso's *Jerusalem Delivered*, the frescoes in the Glyptothek of Munich, and his colossal 'Last Judgment' in the Ludwigskirche at Munich. He d. at Berlin. C.'s art was essentially Ger., and he illustrated with remarkable felicity the masterpieces of Ger. poetry. His work is marked by a somewhat frigid idealism characteristic of the 'Nazarene' group to which he belonged. He had numerous famous pupils, among them Kaubach, and some of the finest Ger. engravers, such as Amsler, Eberle, etc.,

selected his pictures to work on, and so enhanced their popularity. See lives by A. Kuhn, 1921, and K. Koetschau, 1934.

Cornell, Ezra (1807-74), Amer. philanthropist, b. Westchester Landing, New York. In his early life he practised as a mechanic in Ithaca; later on he became very rich through his association with the Western Union Telegraph Company. C. Univ. was founded by him at Ithaca in 1868.

Cornell, Katharine (1898-), Amer. actress, b. Berlin. Her father, Peter C., M.D., was a theatre manager. She married Guthrie McClintic. She is rightly regarded as the leading actress of America and has a long and most distinguished record. She made her first appearance on the stage at the Comedy Theatre, New York, in 1916, with the Washington Square Players in *Bushido*, later touring with Wm A. Brady. Her first London appearance was at the New Theatre in 1919, when she played 'Jo' in *Little Women* and scored a remarkable and immediate success. Her list of successes is a long one. In 1931 she entered management successfully, playing Elizabeth in *The Barretts of Wimpole Street*. K. C. is one of the outstanding actresses of her day and has received many academic honours and degrees from all the leading Amer. univs.

Cornell University, at Ithaca, New York, and New York City, named after its founder, was opened at Ithaca in 1868. Andrew D. White was president until 1885. It became coeducational in 1872 and had 10,300 students (7800 undergraduates) in 1956, with a teaching staff of 1390. It has colleges of arts and sciences, agriculture, architecture, home economics, engineering, a medical college and a veterinary college, and schools of education, law, hotel administration, industrial and labour relations, nursing, nutrition, and business and public administration. The libraries contained 1,700,000 vols. in 1956. Cornell College, at Mount Vernon, Iowa, is a separate institution.

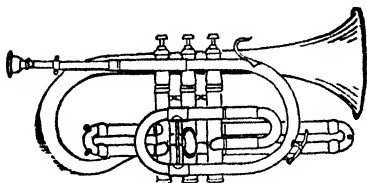
Cornor, word of Amer. origin. In the first instance used to denote a market given to a particular class of stock, e.g. railway C. Now, however, it is used for a speculation in the stock exchange in which a broker or brokers puts up all the available stock of any particular commodity, such as wheat, with a view to forcing sellers of the stock or commodity to buy from those who formed the C. at their own price. A C. is generally brought off in a new security when by false dealing stock-jobbers are persuaded to sell speculatively shares which really are in the hands of the set of people who cornered the market.

Cornor Brook, in on the W. coast of Newfoundland, at the mouth of the Humber R. (which empties into Bay of Islands), N. of St George's Bay. It is noted as the site of the largest integrated pulp and newsprint mills in the world and for its scenery and its herring fisheries.

Cornet was in the 18th cent. and up to 1871 the lowest rank of commissioned officer in the cavalry, corresponding to ensign in the infantry. In 1871 the title

of C. was abolished and that of second Lieutenant substituted. The work of a C. was to assist the capt. in the duties connected with his troop.

Cornet (Fr. *cornet à piston*; It. *cornetto*), treble wind instrument made of brass. It has a cupped mouthpiece, and a tube intermediate in size between a trumpet and a bugle, which give it a tone intermediate between these two instruments. Its open notes consist of C (below the treble



VALVE CORNET

stave), G, C, E, and above the stave C, B \flat , C, and in addition 4 higher notes D, E, F, and G, and a fundamental note, C (an octave below the stave), but these last 5 notes are seldom used. Three valves give the connecting notes and half-notes of the scale, the first slide lowering the sound by 1 tone, the second by a semitone, and the third by 3 semitones. Three valves or pistons which are depressed by the fingers allow the air to pass through these slides. The C. is used in orchestral and solo music and in military bands. Formerly the C. was played in a number of different keys, but, like the trumpet, it now exists, as an orchestral instrument, in the 2 keys of B flat and A.

Corneto, see TARQUINIA.

Cornett (Ger. *Zink*), old wind instrument, now in disuse, in no way resembling the modern valve cornet. It had a long, thin, slightly tapering stem, curved or straight, made of wood or ivory and covered with leather, and a cupped mouthpiece. The bass instrument of the C. family was the serpent (q.v.).

Cornflower, or **Bluebottle**, see CENTAUREA.

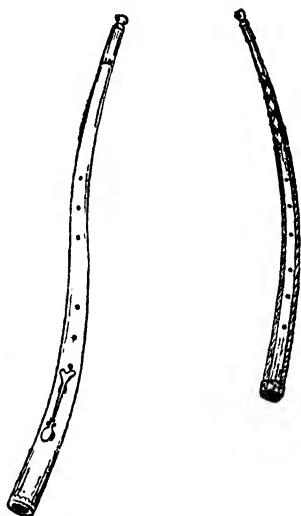
Cornford, **Frances Crofts** (1886-), poetess, b. Cambridge. Her mother was a lecturer at Newnham. Her books of verse include *Spring Morning*, 1915, *Autumn Midnight*, 1923, *Different Days*, 1928, *Mountains and Moorlands*, 1934, and *Travelling Home*, 1948; her *Collected Poems* appeared in 1954.

Cornhill, one of the most important streets in the City of London, running from the Royal Exchange to Leadenhall Street. A Rom. basilica used to stand at its E. end and partly on the site now occupied by Leadenhall Mkt. Stow, who was b. in the par. of St Michael's, C., states (unsupported by any other authority) that an auct. corn mkt. existed on this site. A general mkt. appears to have existed here in the 14th cent. C. contains the churches of St Michael and St Peter (both built by Wren), banks, and insurance and other offices. The Royal

Exchange, situated between C. and Threadneedle Street, was originally built by Sir Thomas Gresham (q.v.) in 1566-71 as a centre for the meetings of merchants and bankers. It was destroyed in the Great Fire and rebuilt 1667-9; again destroyed by fire in 1838 and rebuilt 1842-4.

Cornhill Magazine, literary magazine founded in 1860 by Thackeray, who was its first editor. His *Lovel The Widower*, Anthony Trollope's *Framley Parsonage*, and George Eliot's *Romola* appeared in its pages. Ruskin, Matthew Arnold, Elizabeth Barrett Browning, and Tennyson were amongst early contributors. Recent writers include Somerset Maugham, H. E. Bates, Sir Harold Nicolson, Margaret Lane, Evelyn Waugh, Osbert Lancaster, John Betjeman, Elizabeth Bowen, Betty Miller, and Patrick Leigh Fermor. The C. M. appears four times a year, and is illustrated.

Cornice, in architecture, is the moulded projection which crowns or finishes the entablature, each Order of architecture having its own peculiar C. The Gk Doric C. is composed of few and bold parts, really of little more than a corona (the projecting and prin. member in every C.) finished above by one or two simple mouldings, and having attached a series of shallow plates or tablets called mutules, which are a distinctive feature of the Doric C. Dentils are peculiar to the Ionic C., and modillions to the Corinthian C. In Gothic architecture there are various types of C.; sometimes taking the form of a row of corbels bearing the



CORNETTS OR ZINKEN

Treble and one-keyed tenor, 16th and 17th centuries.

parapet, and sometimes small arches rising from the corbels.

Corniferous Period (from Lat. *corna*, horn, *ferre*, to bear). In Amer. geology this is the second of the four great divs. of the Devonian system, and includes the Schoharie grit and Corniferous limestone. It is a widespread formation, full of fossils, and rocks of this series, mostly sandstone, are found along the Appalachians in Ohio and in Canada, where they contain valuable deposits of petroleum.

Cornigliano, It. tn, in Liguria (q.v.), a residential suburb of Genoa (q.v.). There are textile and dyeing industries. Pop. 20,000.

Corniglio, It. tn, in Emilia-Romagna (q.v.), 25 m. SW. of Parma (q.v.). Pop. 7500.

Cornimont, Fr. tn, in the dept of Vosges. Thread is manuf. Pop. 2200.

Corning, **Erastus** (1794-1872). Amer. capitalist, b. Norwich, Connecticut. He moved to Albany, New York, in 1814, and eventually became the owner of large iron works and banks. Principally known as connected with early Amer. railway development. He was twice elected a Democratic representative to Congress, and at the time of his death was vice-chancellor of the univ. of New York.

Corning, city of Steuben co., New York, U.S.A., situated on the Chemung R., 13 m. WNW. of Elmira. Its industrial life consists of foundries, machine works, brick and glass works, and lumber mills. The 200-in. telescope mirror of Mt Palomar (California) Observatory was made at the C. glass works. Pop. 17,864.

Cornish, **Vaughan** (1862-1948), geographer, b. Debenham, Suffolk. Educ. at St Paul's School and Victoria Univ., Manchester. Worked for the preservation of the scenery of rural England. President, geographical section, Brit. Association, 1923; of the Geographical Association, 1928. Pubs. include *A Strategic Atlas of the Oceans*, *National Parks and the Heritage of Scenery*, 1930; *The Scenery of England*, 1932; *Ocean Waves and Kindred Geophysical Phenomena*, 1934; *The Beauties of Scenery*, 1943; *Geographical Essays*, 1946; *Photography of Scenery*, 1946.

Cornish Language. The old C. L. belonged to the Cymric div. of Celtic (see CELTIC LANGUAGES), in which are included Armorican (see BRETON LANGUAGE AND LITERATURE) and Welsh. It survives in a few words still used in the fishing and tinning communities, as well as in the names of persons and places, but the last persons to speak it (the last of all was reputed to be one Dolly Pentreath) d. towards the end of the 18th cent. Early C. is represented by *Vocabula in pensum discipuli* in a 12th-cent. manuscript ed. by Zeuss, 1853. The most interesting relics of the C. L. are a few miracle plays, entitled *Gwarioc*, which were ed. and trans. by Edwin Norris, 1859. Added to the trans. is a sketch of Cornish grammar and a vocabulary from a 13th-cent. manuscript. The best dictionary is Williams's *Lexicon Cornu-Britannicum*, 1865. Of the C. miracle plays, the

most considerable of the series were those known as the *Ordinalia*, a trilogy, of which two 15th-cent. copies are still in existence. Most of the C. miracle plays emanated from Glasney College at Penryn and date from 1350 to 1500. Two notable plays are the *Beunans Meriasek* (or *Life of Meriasek*, copy of 1504) and *Gwercans an Bys* (or *The Creation of the World*; the earliest extant copy was written by William Jordan of Helston, 1611). Recently there has been an attempt to revive the C. L. See E. Norris, *Sketch of Cornish Grammar*, 1859, and *The Ancient Cornish Drama* (2 vols.), 1859; W. Stokes, *The Passion*, 1861, and *The Life of Saint Meriasek*, etc., 1872; H. Jenner, *Handbook of the Cornish Language*, 1904; R. Morton Nance, *A New Cornish-English Dictionary*, 1938; W. Ll. Davies, *Cornish Manuscripts in the National Library of Wales*, 1939; A. S. D. Smith, *The Story of the Cornish Language*, 1947.

Corno, **Monte**, see GRAN SASSO.

Corno di Bassetto, see SHAW, GEORGE BERNARD.

Cornouaille, dist. in Brittany in the dept of Finistère; the chief tn is Quimper. It is barren, rocky, and desolate, resembling in many features some parts of Cornwall in England.

Cornu Copiae, later called **Cornucopia**, a horn of plenty. It is used as a symbol of prosperity. In architecture and sculpture the horn is often seen placed in the hands of Plutus, Fortuna, and others, who pour from it abundance of fruits or corn.

Cornus, chief genus of Cornaceae, of 40 species of shrubs, trees, and herbs distributed over temperate regions of N. hemisphere. *C. sanguinea*, the common dogwood or cornel, is a native berry-bearing shrub with cymes of white flowers. *C. suecica*, the dwarf cornel, is a herbaceous plant about 6 in. high, with few flowers. It is a creeping plant growing in pastures in Scotland and Northumberland, and its berries have tonic qualities. The barks of *C. florida*, *C. sericea*, and *C. rugosa* are used in the U.S.A. as substitutes for Peruvian bark. *C. canadensis*, or bunchwood, has large conspicuous flowers. *C. officinalis* is cultivated in Japan as a febrifuge. *C. mas*, Cornelian Cherry, *C. nuttallii*, and *C. florida* are grown in gardens for their ornamental beauty.

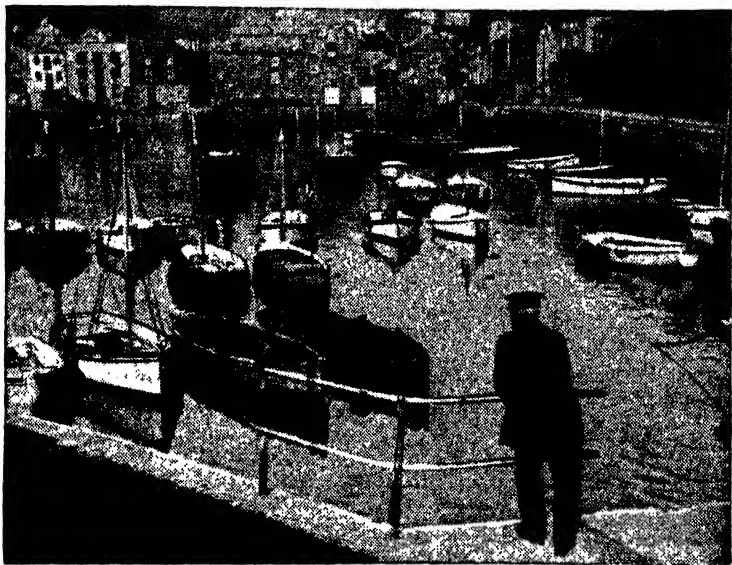
Cornutus, **L. Annaeus**, Stoic philosopher of the time of Nero, who exiled him for criticising his projected verse chronicle of Persian annals. One of his pupils was Persius, whose satires he revised. See G. Martini, *De L. Annaeo Cornuto*, 1925.

Cornwall, **Barry**, see PROCTOR, BRIAN WALLER.

Cornwall, **Earl of**, see GAVESTON, PIERES. **Cornwall**, SW. maritime co. of England, bounded on the N. and NW. by the Atlantic Ocean, E. by Devonshire, and S. and SW. by the Eng. Channel. The Scilly Isles, 24 m. W. of Land's End, form part of the co. There are only 2 harbours of any importance on the N. coast, one formed by the estuary of the Camel, where Padstow is situated, and the other being the bay of St Ives; there are

numerous small creeks of little importance. The coastline on the N. is formed of bold and rugged cliffs, and is famed for its wild, rocky scenery, while the S. coast is still bold and rocky, but in a lesser degree, and its headlands are covered with luxuriant vegetation. Falmouth harbour, on the S. coast, is one of the finest in Britain. The surface of C. is extremely irregular, and from the Tamar to Land's End it is a series of rugged hills, alternating with wide stretches of moorland. Brown Willy (1375 ft) is the highest point in the co. The chief riv. is the Tamar; it is tidal, and navigable for 19 m. The climate is mild, particularly in

in 1925 with 1 lb. of Fr. Rescoff seed, and developed into an industry worth £1,250,000 a year by 1939. Numbers of cattle and sheep are bred. C. formerly obtained much wealth from its mines, yielding tin, copper, lead, iron, zinc, bismuth, and arsenic. At one time C. supplied half of the world's copper, and all Britain's tin. As late as 1913 5000 tons of tin were produced yearly, but at the present day 2000 mines are abandoned and only 4 are working. The decline has been caused by the easier worked Malayan sources, for the difficulties of extraction in C. are considerable, and the cost therefore high. The rich lodes remain, however,



John H. Stone

MEVAGISSEY, A CORNISH FISHING PORT

the S., and there the vegetation grows in almost tropical abundance, fuchsias, geraniums, camellias, myrtles, and hydrangeas of considerable size flourishing in the Penzance and Falmouth dists. during the winter; in the Scilly Isles exotics grow in the open, and a good supply of early vegetables is the result of the development of market-gardening. The growing of anemones alone has an ann. value of £250,000 sterling. Fruit-trees, with the exception of the apricot, nectarine, and peach, thrive successfully. C. ranks high as an agric. co.; the soil is rich in most parts, the crops plentiful, and very early in some localities. Oats form the most important grain crop; the green crops include swedes, turnips, and mangolds. The Cornish broccoli trade was expanded

and the newly formed Cornish Mining Development Association has set forth (1948) a plan for development which, it is stated, can eventually produce tin and by-product metals (arsenic, tungsten, etc.) to an ann. value of £3,000,000, providing sufficient capital and labour is available. A product also of great importance is China clay, the centre of this industry being at St Austell. It is exported to the pottery dists. for the manuf. of porcelain and to Lancashire for cotton goods. The serpentine rock is largely quarried in the Lizard dist., and made into ornamental objects; it is noted for its beautiful colourings. The fisheries of C. are among the most important on the SW. coast, and form another industry of the co. The chief fishing stations are on Mount's Bay

and at St Ives; mackerel, pilchards, and herrings are caught in large quantities, 20,000 hogshheads of pilchards being taken in an average year. In some respects the natives resemble the Welsh people, such as in their aptitude for oratory and an intense love and pride of country. It is a co. full of prehistoric remains. They may be classed as follows: (1) cromlechs, such as Lanyon, Mulfra, and Zennor, these all being found in the Land's End dist. The first is high enough for a man to ride under; (2) rough monoliths, found in all parts of C.; (3) circles, of which the prin. is that known as the Hurlers, near Liskeard; (4) alignments, or avenues of stones, a very interesting example of one being that called the Nine Maidens near St Columb Major. The ant. remains also include hut dwellings, cliff castles, and hill castles. C. possesses many ruined castles, such as those at Tintagel and Launceston, parts of which date from Norman times. The co. belongs to the W. circuit, and the assizes are held at Bodmin. The co. tn is Truro (pop. 13,350). C. is popular with holiday-makers and tourists. Area 868,167 ac. Pop. 317,900. See R. Polwhele, *The History of Cornwall*, 1816; W. Collins, *Rambles beyond Railways*, 1851; M. Quiller-Conch, *Cornwall's Wonderland*, 1914; C. E. Vulliamy, *Unknown Cornwall*, 1925; A. Mee, *Cornwall*, 1937; A. K. Hamilton Jenkin, *Cornish Miner*, 1927, *Cornwall and its People*, 1945.

Cornwall, co. seat of Stormont co., Ontario, Canada, at the foot of the long Sault Rapids of the R. St Lawrence, 55 m. S. of Ottawa, on the main line of the Canadian National railway, and on the Canadian Pacific railway and New York Central railroad. Situated on the St Lawrence R. (bridge to New York state), it has unlimited cheap hydro-electric power. C. has a good harbour for lake and riv. traffic. It began as the co. seat of an agric. area that exported only potash, grain, and masts for sailing ships. Now it is an industrial community, with textile and chemical plants, furniture, pulp and paper, fibre products, and draperies. It is the market centre of a rich mixed farming and cheesemaking dist. C. was founded in 1783 by United Empire Loyalists. It was incorporated as a tn in 1848. Almost opposite is the Indian vil. of St Regis, Quebec. Pop. 41,064.

Cornwallis, Charles, Marquess (1738-1805), soldier and administrator, son of the first Earl C. On leaving college he entered the army, and in 1761 served a campaign in Germany. In 1762 he succeeded to the earldom and estates of his father. He was made governor of the Tower in 1770. When the war of Amer. Independence broke out he accompanied his regiment and was victorious over Gen. Gates at Camden, 1780; also over Gen. Greene at Guilford, 1781; but at Yorktown, Virginia, disaster befell him, and the Eng. cause in America was completely overthrown. He escaped censure owing to the great esteem in which the king held him, and in 1786 he was appointed Governor-General of India, and while

there made many reforms, but on account of differences with Tipoo Sahib his plans were much interrupted. In 1791 he captured Bangalore, and after having concluded a treaty with Tipoo Sahib he returned to England in 1793. He was then raised to the rank of marquess, and in 1798 was appointed to the vice-royalty of Ireland, where he succeeded in subduing the rebellion of 1798, showing much integrity and wisdom in his method of obtaining peace. In 1801 he was replaced by Lord Hardwicke. In 1802 he negotiated the peace of Amiens. In 1805 he was sent to India as governor-general in the place of Lord Wellesley, but upon arrival at Calcutta his health had already broken down, and on the way up country, to take command of the troops, he died at Ghazipur. See W. S. Seton-Karr, *Cornwallis*, 1890.

Cornwallis, Sir William (1744-1819), admiral, was the younger son of Charles, first Earl C. He entered the navy in 1755, and in 1758 served at Louisbourg. In 1759 at the battle of Quiberon Bay, and for his services was made commander in 1762. He was afterwards engaged in the actions off Grenada (1779), St Kitts (1782), and Dominica (1782). He was made rear-admiral in 1793, vice-admiral in 1794, and admiral in 1799. In 1795 he encountered a Fr. force far greater in numbers than his own, but safely escaped, and he commanded the Channel fleet in 1801 and from 1803 to 1806. See C. F. M. Cornwallis-West, *Life and Letters of Admiral Cornwallis*, 1927.

Cornwell, John Travers (1899-1916), boy naval hero of the First World War, b. at Leyton, Essex, and educ. at Walton Row council school. At the battle of Jutland he stayed alone at his post on the *Chester*, though mortally wounded. He was awarded the V.C. posthumously.

Cornyshe, William (†-1523), composer, poet, playwright, and actor, was master of the choristers at Westminster Abbey under Henry VII. and also organised pageants and masques at court under that king and Henry VIII, whom he twice accompanied to France with the Chapel Royal, in 1513 and 1520. In 1523 he was given the manor of Hylden in Kent, but he d. there only some 2 months later. He wrote sacred music and songs for sev. voices; a MS. contains works by him and by Henry VIII, the latter possibly written with his assistance.

Coro, city, cap. of Falcón state, Venezuela, about 200 m. WNW. of Caracas. It was founded in 1527, and was the cap. of the Sp. prov. from that date until 1578. Pop. 28,300, of whom many are Indians and mestizos. It has much declined since Caracas was made the cap. Its port is La Vela (8 m. ENE.), which exports coffee, timber, and hides.

Corocoro, tn and mining centre, cap. of Pacajes prov., in La Paz dept., Bolivia. Copper ore is the chief product of the mines. Altitude 13,100 ft. Pop. 6900.

Corgne, La, see CORUÑA, LA.

Corolla (from Lat. *corona*, a wreath or crown), inner whorl of floral envelopes which surround and protect the essential

organs of the flower. The C. is made up of petals which are usually brightly coloured and often scented, in order to attract insects for the purpose of pollinating the flower. Another function of the petals together with the sepals is to protect the stamens and pistil when the flower is in bud, and in some cases from rain, etc., by closing when the sun goes in. When the petals are free from one another, as in buttercups, the flower is said to be polypetalous; it is gamopetalous when they are joined to form a tube or cup as in primroses. A flower is distinguished as hypogynous, perigynous, or epigynous, according as the bases of the petals are inserted below, on a level with, or above the ovary, as in buttercup, rose, snowdrop respectively. In many flowers, e.g. daffodil, there is no distinction between two floral envelopes, but the calyx and C. together form the perianth; in other cases there is calyx only, and C. is missing, e.g. meadow-rue. When all the petals are alike, the flower is said to be regular, as in lily, otherwise it is irregular, as in orchid, pea, etc. Of irregular flowers the two best-known types of C. are the bi-labiate or two-lipped, as in the dead-nettle family, and the ligulate or strap-shaped, which occurs in the outer florets of the daisy. In some cases the C. is fugacious, i.e. it falls off as soon as it is gathered, as in flax; in a few cases it is persistent and remains in a withered condition round the fruit; this occurs in campanula.

Corollary, in mathematics, is a proposition which follows another proposition as a consequence, and therefore does not require any separate demonstration.

Coromandel, name of the oldest gold field in New Zealand, discovered in 1852. It is the centre of the former gold-mining and kauri timber dist. on the C. (Colville) peninsula, and is now a popular holiday resort.

Coromandel Coast, name given to E. coast of India, between Cape Calimere and the mouth of Kistna R.

Coron, or **Koroni**, seaport and medieval fortress of Greece in Messenia, situated on the W. coast of the gulf of Calamata, near the site of the anc. Colonides. The industry of the tn is silk manuf. Pop. 2300.

Corona: 1. In architecture, the lower part or drip of a cornice which projects for some distance in order to carry off the rain. The term is also used of the crown or circlet suspended from the roof of a church to hold candles or lamps, which are lighted on solemn occasions.

2. In astronomy, see SUN.

3. In botany, the crown at the mouth of the tube formed by the perianth (petals and sepals) in the genus *Narcissus*.

4. Electric discharge from a conductor at high potential, due to breakdown of the insulating layer next to the conductor surface. For bare conductors the C. is both visible and audible, and also noticeable by a smell of ozone. The C. is different for positive and negative wires; the critical potential at which it arises is lower for thin than for thick wires, lower at high altitudes (lower atmospheric pressure) and high humidity.

Corona Borealis and **Australis**, N. Crown and S. Crown. The first is a N. constellation, situated between Boötes and Hercules, and the bright star of its cluster (marked α) may be seen about an hour E. of Arcturus, and about eight degrees nearer to the pole. Nova Coronae was the first nova to be observed with the spectroscope (1866). C. Australis is a small S. constellation, first found in Ptolemy's catalogue. It is situated S. of Sagittarius.

Coronach, name applied to a dirge which in years past was sung at funerals in Scotland. In the highlands the singing of this dirge was called keening (as also in Ireland), but it was later played on the bagpipes.

Coronado, Francisco Vázquez de (1500-1545), Sp. explorer of the SW. of the U.S.A.; appointed in 1539 governor of New Galicia; set out in 1540 to discover the 'seven cities of Cibola'. He explored E. Arizona, the Rio Grande, and Kansas. See G. P. Winship, *The Coronado Expedition*, 1896.

Coronation (Lat. *coronare*, to crown), ceremony of crowning the sovereign of a country. The practice of placing a crown on the head of a new sovereign dates from early times, as we read in the O.T. that Solomon was crowned. The kings of Israel and Judah were usually anointed with oil by the high priest, by which act they were consecrated to the service of God. This anointing with oil still forms part of the C. service of a Brit. sovereign. It probably resembles the hallowing of kings mentioned in the *Anglo-Saxon Chronicle*, and its form is in all essentials that used since the time of Richard I, though of course the service has been modified from time to time. The C. of the Brit. sovereign takes place in Westminster Abbey. The anct C. chair is carefully preserved, and has been used at the C. of Eng. kings and queens since the time of Edward I. Under the throne rests the Stone of Destiny (*Lia Fail*), which according to tradition was the pillow of Jacob, and was, in the fifth century BC, carried to Ireland and thence to Scotland. It was brought to England by Edward I as a symbol of his conquest of Scotland, for on that stone the Scottish kings had always been crowned. The service is read by the archbishop of Canterbury, after which the sovereign takes his C. oath. The oath in the Eng. service has always been very explicit, in this way differing from that of other European countries. After the revolution of 1688 the Brit. sovereign had to promise to maintain 'the laws of God, the true profession of the Gospel, and the Protestant reformed religion as it is estab. by law.' Special clauses were here added which were particularly obnoxious to the Rom. Catholic subjects in the United Kingdom. By an Act of Parliament in 1910 the oath was altered, and the objectionable phrases omitted. After the oath has been taken the sovereign is seated in the anct C. chair above mentioned, and is anointed, on the head, breast, and palms of the hands, with holy

oil from the ampulla. Next follows the investiture, when the sovereign dons the *colobium sindonis*, a white silk shirt, and is girt with a sword. The orb and the ring are also delivered to him, after which he is crowned by the archbishop. The sovereign then goes back to his throne, and receives the homage of the peers. It was formerly the custom for the consort of the sovereign to be crowned some months after the formal C., but at recent C.s in England the consort was anointed and crowned after the acts of homage had been paid. The king and queen finally receive the holy communion. In early times in Europe a king or queen was not

Coronel, Battle of, naval battle in the First World War fought on 1 Nov. 1914, off Coronel on the coast of Chile, between Rear-Adm. Cradock's squadron comprising the armoured cruisers *Good Hope* and *Monmouth*, the light cruiser *Blagovest*, and the converted merchantman *Otranto*, and a Ger. squadron commanded by Adm. von Spee consisting of the armoured cruisers *Scharnhorst* and *Gneisenau*, and the light cruisers *Leipzig* and *Dresden*. The Brit. ships were old and their armament immensely inferior to that of the Ger. cruisers. The result was never in doubt, and the *Good Hope* and *Monmouth*, after a gallant fight against odds, were



A SCENE FROM THE CORONATION OF H.M. QUEEN ELIZABETH II, WESTMINSTER ABBEY, 1953.

For Photos

recognised until the C. had taken place. Now the reign dates from the accession and not from the C., which is usually delayed for some months after the death of the late sovereign. *Consult* L. G. W. Legg, *English Coronation Records*, 1901; H. Thurston, *Coronation Ceremonial*, 1911; P. E. Schramm, *The History of English Coronations* (trans.), 1937; L. E. Tanner, *History of the Coronation*, 1953.

Coronation Gulf, arm of the Arctic Ocean the extreme N. point of Canada. It was discovered by Sir John Franklin (1786-1847), the Arctic explorer.

Coronea, anct tu in Boeotia, in Greece, situated to the W. of Lake Copais. The Boeotians conquered the Athenians here in 447 BC, and the Spartans defeated the Thebans and their allies in 394.

sunk, the Brit. loss being 1400 men. Cradock went down with his ship.

Coronella, genus of ophiidians inhabiting Europe, Asia and America. All are harmless. *C. austriaca*, a species found in Britain, is called the smooth snake. It is about 2 ft. in length, feeds on lizards and mice, and is viviparous.

Coroner. The office of C. is one of considerable antiquity. The *Mirror of Justice* is cited by Coke to show that the office existed as early as the reign of Alfred. But there is no satisfactory evidence to establish an earlier period than that of Richard I. The name of C. is said by Lord Coke to be derived from Lat. *corona* (crown), from the fact that the C.'s office had principally to do with pleas of the crown. In this general sense

the lord chief justice is by virtue of his office supreme C. for England, with power to hold an inquest in any part of the kingdom. But the officers now usually understood by this term are the co. C.s, although the Coroners Act, 1887, which re-stated the qualifications of a C., expressly saved the powers of *ex officio* C.s. In early times the office of C. appears to have been one of great estimation; for by statutes of the reign of Edward I and Edward III C.s are required to be knights, or 'of the most meet and most lawful men of the county.' Before the Coroners Act of 1887 there existed a proprietary qualification, the idea being that the C. should have sufficient wherewithal to answer to the people for his shortcomings. The property qualification is now practically dispensed with, as the Coroners Act of 1887 has in effect left the co. to pay any penalties incurred by the C. A C. must be a barrister, solicitor, or qualified medical practitioner of not less than five years' standing in his profession. The C. formerly had jurisdiction of a very comprehensive nature, embracing inquiries as to sudden death, treasure trove, wreck, whales, sturgeon, and deodands (proceeds of sale of a personal chattel which had caused the death of any person ordered to be paid to charity). The Coroners Act, 1887, put an end to all these duties except the function of holding inquests *super visum corporis*, and as to sudden death and treasure trove. The prin. duty of a C. is, with the assistance of a jury composed of at least twelve men and not more than twenty-three, to inquire into the deaths of persons who have died suddenly by violence, under suspicious circumstances, in prison, or at the hands of the hangman. C.s are elected for life; but if they accept any office incompatible with their duties, such as that of sheriff or alderman, or become incapacitated, they may be removed by means of the writ *de coronatore exonerando*; and a C. guilty of extortion, corruption, or wilful neglect of duty is, by an Act of George II's reign, not only punishable as for misdemeanour, but also incapable of ever again acting as a C. The lord chancellor has power independently of the above Act to remove C.s for neglect of duty, upon petition presented by the freeholders of the co. A C. can enforce a post-mortem examination of the body and summon medical or other witnesses. He may also order exhumation, but will generally, in cases of doubt, first obtain the order of the home secretary. The C. must, but the jury need not, view the body. If the C.'s jury find a verdict of murder or manslaughter, the C. can commit the accused for trial, and, in manslaughter, admit him to bail. The verdict of the jury must be that of twelve at least. Under an Act of 1926, if the C. learns, before the verdict, that some person has been charged with murder, manslaughter, or infanticide, he must adjourn the inquest until the criminal proceedings are concluded. In consequence the C. has virtually ceased to exercise the function of committing persons for trial. Even if

the justices decline to commit for trial, the prisoner is not generally tried on the C.'s inquisition. Under a local Act the C. of the City of London is empowered to hold an inquiry into the outbreak of fires, which inquiry may eventuate in a verdict of arson. A departmental committee appointed in 1936 to inquire into the law concerning C.s reported that their jurisdiction should be limited to investigation of how, when, and where death occurred; that a C. should not have power to commit a person for trial on a charge of murder, manslaughter, or infanticide; that C.s' courts should be prohibited from passing censure; and that only barristers should be appointed to the office. Under the London Government Act, 1939, a C. for the co., or his deputy, is disqualified from being elected to or being a member of the co. council.

Coronet, inferior crown worn by the nobility. In England it was in use in the reign of Edward III; but the different forms given to the C.s of the various orders of the peerage are of later date, as is also the use of the crimson velvet cap, lined with ermine and surmounted by a gold tassel, now worn within the C. Barons first wore C.s in the reign of Charles II. They are worn by peers on the occasion of a state ceremony, such as the coronation of a king. In 1665 permission was granted by Charles II to the peers of Scotland and Ireland to use similar C.s to those worn by Eng. peers. The following are the different forms that are used throughout Great Britain: the C. of the Prince of Wales differs from the royal crown only by the absence of one arch. The C.s of the other princes, sons of the king, have no arches. The C. of a duke bears over the rim of gold eight strawberry leaves. A marquess has four strawberry leaves, alternating with as many pearls upon short points. An earl's C. has eight points of a greater height, with a pearl on each, alternating with as many strawberry leaves on the rim below. A viscount's C. has sixteen pearls set on the rim itself, while a baron has six in the same position. The pearls, so named, are made of silver. No peer, unless of royal family, may have his C. adorned with jewels. The C.s of foreign nobility have no caps, and are used only in blazonry.

Corot, Jean Baptiste Camille (1796-1875), Fr. landscape painter, *b.* Paris. According to his father's wishes he became an assistant in a Paris drapery business, but, after having served an apprenticeship of seven years, he resolved to become a painter. He first studied art with Michallon, on whose death he passed into the atelier of Victor Bertin. In 1825 he went to Italy, where he stayed for two years, studying the old masters and feeding his imagination upon the beautiful scenery that surrounded him. In 1827 he exhibited two lt. landscapes at the Salon, 'Vue prise à Narni' and 'Campagne de Rome.' He then settled in Paris, though he again travelled in Italy, in 1835 and 1843, as well as in England and Switzerland. In 1833 he won a medal

of the second class, and in 1855 and 1857 medals of the first class. He received the cross of the Legion of Honour in 1846, and was promoted officer in 1857. C.'s genius was not early recognised, and he made his way slowly, but in later life wealth and honour were heaped upon him. In 1874 his admiring, almost worshipping friends, hurt by the indifference of the Salon, gave him a gold medal. His pictures were sold at a very high price, but C. was indifferent to money. 'Hagar in the Wilderness' and 'Dante' he never parted with, refusing all offers for them. He was a gentle, kind-hearted man, very generous to his friends, and devoted to his mother and sister. He never married. C.'s early work is clearly influenced by his classical studies. He showed an extraordinary technical ability; his drawing is very careful and detailed, and his execution somewhat precise and severe. He peopled his landscapes with nymphs and goddesses. It was not till about 1843, after his return from his second visit to Italy, that he began to assert his full individuality. Following the example of Constable and other Eng. painters, he worked out of doors, choosing for his main sketching grounds Barbizon, in the forest of Fontainebleau, and the valley of the Seine. He interpreted nature in her tender, elusive moods, on a hazy spring morning or a shadowy night. He was fond of painting mists, and his colours are of the most delicate shades of greys and greens. Some critics have objected that he did not paint in nature's blemishes. His pictures are imaginative visions of 'the light that never was, on sea or land.' Among his masterpieces are 'Danse des Nymphes,' 'Orphée,' 'Paysage Breton,' 'Macbeth,' 'Joueur de flûte,' 'Homère et les Bergers,' 'Les Bûcherons,' 'Étoile du Soir,' 'Effet de Matin,' 'Plaisirs du Soir,' and 'Baptême de Jésus-Christ.' See A. A. P. C. Blanc, *Les Artistes de mon temps*, 1876; G. Geffroy and A. Alexandre, *Corot and Millet*, 1902; E. Meynell, *Corot and his Friends*, 1908; also lives by A. Michel, 1905; M. Lafargue, 1925; C. Maclair, 1930; P. Jamot, 1936.

Corowa, in on the N. bank of the Murray, New S. Wales, Australia. There are lead mines in the neighbourhood, and the tin is noted for its butter, wine, and dried fruits. Pop. 3090.

Corozal, second tin of Brit. Honduras, on a strategic road, 96 m. N. of Belize and 8 from the Quintana Roo frontier of Mexico. There are tropical forest products and fisheries. Pop. 2190.

Corporal, in the Brit. Army, a non-commissioned officer ranking below a sergeant. The derivation of the word is somewhat doubtful, but similar terms are in use by other countries for non-commissioned officers of corresponding rank, as *caporal* in France and *caporale* in Italy. A C. is distinguished by wearing 2 chevrons on both sleeves. While he has certain advantages, and on occasion may be given the command of a small number of men, a C. usually takes his place in the ranks as a private during parade. In the household cavalry there

is a C. of Horse, the equivalent of the sergeant elsewhere; while in the navy the term ship's C. is applied to a petty officer who takes orders from the master-at-arms.

Corporal, linen cloth spread on the altar on which the sacred vessels stand, and the sacred elements of the Holy Eucharist are consecrated.

Corporal Punishment, see FLOGGING.

Corporation. A C. is an association of individuals which by a legal fiction is regarded as a single person. The distinguishing characteristic of a C. is expressed in the maxim that a C. can never die, and consequently the death or change of the persons who administer the corporate property has no effect upon the ownership, which subsists in the artificial person or legal entity of the C. The notion of a C., together with its various corporate attributes, is a conception borrowed from the Rom. legal idea of a *collegium*, having a right of universal or perpetual succession. In the Eng. system C.s are said to be either sole or aggregate. The best examples of C.s sole are the Queen, a parson, and the Public Trustee. A C. sole implies a succession of single persons occupying a particular office, each assuming the rights and powers of his predecessor. The conception of a C. sole appears to be quite indigenous to Eng. law. The constitutional dogma that the sovereign cannot die is said to have originated in turbulent times, when it was desirable to make an impression on superstitious minds. A C. aggregate is defined by Blackstone to be one which consists of many persons united in one society; hence many writers consider C.s aggregate to be the only true form of C. Illustrations are the mayor and commonalty of a city or town (see BOROUGH), now called a municipal C. C.s are also classified as eccles. and lay. Illustrations of the former are bishops, deans, and chapters. The latter are divisible into civil, or such as exist for temporal purposes, and *eleemosynary*, or such as are constituted for the perpetual distribution of alms, e.g. hospitals supported by voluntary contributions. Modern writers frequently classify C.s into eccles., municipal, trading, charitable, and educational. Lay C.s may also be divided into *privileged*, i.e. endowed by the law with special powers in excess of the ordinary law for the purpose of carrying out some work to the public advantage, e.g. chartered companies; and *unprivileged*, the most common examples being registered joint-stock companies. These latter entities are assimilated rather to ordinary partnerships in many respects. A C. can only be created by the sovereign or by an Act of Parliament; but when any such body has existed from time beyond legal memory (i.e. the death of Richard I, 1199), it is presumed to have originated in one of these ways. The essential characteristics of a C. are the use of a common seal, the power of making by-laws, the capability of suing and being sued in its corporate name as a single person (so that the C. as an entity is responsible for the acts, contracts, and

defaults of its members), the power of the majority to bind the C., and the power at common law to acquire and hold land. The power to hold land is, however, restricted by the Mortmain Acts, which make it necessary for a C. to obtain the licence of the Crown before it can acquire land for any purpose. The dissolution of a C. may be effected by a surrender to the Crown, where all the members concur. *See also* BOROUGH and LOCAL GOVERNMENT.

In the U.S.A. C. is the equivalent of the Eng. joint-stock company. *See* COMPANY.

Corporation Duty, duty of 5 per cent levied in 1885 on the ann. value of income or profits accruing to a corporation (q.v.) from all its real and personal property. This duty is a substitute for death duty, which a corporation escapes since by a legal maxim it can never die. But a corporation is liable to pay succession duty on realty acquired under a will, and legacy duty on a gift of personality.

Corporation of London, The, governing body of the city of London, officially styled 'the mayor and commonalty and citizens of the city of London,' and often referred to as the City C. It is the oldest municipal authority in the United Kingdom. The foundations of municipal gov. were laid when Alfred the Great in 886 appointed his son-in-law Ethelred governor of the city, apparently with jurisdiction over Middlesex. Between 1068 and 1075 William the Conqueror granted the citizens a charter which confirmed existing rights. The city has no charter of incorporation, but is a city by prescriptive right. Its medieval constitution is largely preserved to-day, and it has powers not possessed by any other local authority in the co. of London, such as the control of its own police force; it is also the Port Health Authority for the Port of London. It has 2 characteristics entirely peculiar to itself—the non-party basis of its voting, and the power to modify its own constitution. The city which it governs is in status both a city and a co. There are 3 governing councils:

1. The *Court of Aldermen* consists of 25 aldermen (who must be freemen) elected for life by the householders of wards: these wards into which the city has been divided for at least 800 years, are more or less coeval with the rank of alderman. The form of election is peculiar to the city, aldermen of other municipalities being elected by the councillors. Their primary function is to act as justices of the peace, and they administered the city before the emergence of the Common Council. 2. The *Court of Common Council*, arising out of early direct democracy, and which assumed something of its present form by 1322, is the prin. administrative body. It consists of the lord mayor, the aldermen, and 206 common councillors (whose numbers are to be progressively reduced to 159 by 1959). These last are elected annually by the wards on St Thomas's Day (21 Dec.), the electors being the rated householders of the wards, who need not be freemen or citizens of the city. The council does its

work in the form of about 30 committees appointed for the various parts of the administration, e.g. the City Lands, Library, and Markets Committees. It elects the clerk, the city remembrancer (representative of the city before parl. committees and at Council and Treasury boards), the city coroner, and the undersheriff. 3. The *Court of Common Hall*, the third of the main courts, is composed of the lord mayor, sheriffs, aldermen, and the liverymen of the city companies, which last have been included in the assembly since 1475. It meets only twice a year; its main business is to elect the sheriffs, the city chamberlain (treasurer), and certain other officials, and to nominate 2 aldermen from whom the Court of Aldermen chooses a lord mayor.

The lord mayor is elected for a year, and to qualify for election must previously have been an alderman and a sheriff. He summons and presides over the courts and meetings of the C., has complete authority to regulate discussion and procedure, and is chief magistrate of the city. He performs much ceremonial duty, such as presiding at the important banquet at the Guildhall (q.v.) on taking office, and within the city he ranks next in precedence to the sovereign. The first mayor of the city, Henry Fitz Aylwin, was appointed in 1192 or 1193. The title of *lord mayor* was never conferred; it occurs in Latin in the 13th cent., in English in 1414, and became accepted usage by 1500. The lord mayor's show, which takes place when he assumes office, has been held since the 14th cent. There are many other officers of the C., whose duties in some cases are survivals of the medieval pageantry of the city. The office of sheriff is the oldest, and is traceable back to the 7th cent. The recorder, appointed for life, is recognised as the prin. officer of the C., and is the senior law officer and the prin. judge of the Central Criminal Court. The field of civic administration, not already indicated, includes open spaces, of which the C. owns over 6000 ac. (nearly all outside the co. of London), the city schools, the 4 bridges within the city area, and the markets, for which the C. is the authority over a radius of 7 m. Though in the main the C. is a self-governing unit, the London Co. Council has certain powers over it. As far as the city itself is concerned, they are jointly responsible for the Co. of London Development Plan (*see* LONDON, *Reconstruction and Replanning*). *See* (ANON.), *The Corporation of London*, 1950.

Corporation of SS Mary and Nicolas, *see* WOODWARD SCHOOLS.

Corporation Profits Tax, imposed in 1920–1; 1s. in the pound on the profits of limited liability companies. It has since been abolished.

Corporative State, one governed by an industrial parliament instead of a chamber of deputies. This political machinery was evolved in Italy. In 1934 a National Council of Corporations was constituted, consisting of representatives of all the chief trades, while the governing body of each individual corporation included

representatives of the State administration and of the Fascist party. The salient feature was the equal proportion of representatives of capital and labour for each section of a corporation, together with an additional element of technical experts. The name corporation was originally applied to the Fascist trade unions, which were designed to replace the old labour unions or confederations. In 1938 the Grand Fascist Council replaced the existing chamber of deputies by a new chamber of the Fasci and corporations as the legislative and representative organ of the State. The new council was formed by a combination of the National Council of the Fascist party and the National Council of Corporations. When Franco defeated the republicans in Spain he set up a C. S. on the It. model. See INDIVIDUALISM.

Corps, Army, a wartime military formation comprising a number of divs. and itself forming part of an army. It is commanded by a lieutenant-general and its approximate strength is 60,000 men. The permanent A. C. system introduced into the Brit. army at the beginning of the cent. was replaced by the commands in 1905.

Corpulency, see OBESITY.

Corpus Christi, one of the prin. feasts in the Rom. Catholic Church, founded by Pope Urban IV in 1264 in honour of the Blessed Sacrament. The festival is kept on the first Thursday after Trinity Sunday. It also figures in the Anglican calendar.

Corpus Christi : 1. Thriving city and seaport, cap. of Nueces co., Texas, U.S.A., on C. C. Bay, 192 m. WSW. of Galveston. Much cotton is grown in the vicinity and it is a popular resort. It has extensive trade in fish, oysters, turtles, canned food, and fruit. Pop. 108,300.

2. The celebrated bay on which the city stands, properly an arm of the Gulf of Mexico. The shallow extension behind the is., S. to the mouth of the Rio Grande, represents the first 110 m. of the Laguna Madre.

Corpus Christi College : 1. Cambridge, founded in 1352 by the members of two Cambridge guilds of C. C. and the Virgin Mary, for the purpose of educating priests. Henry, Duke of Lancaster, alderman of these guilds, procured a royal charter for the foundation, which for many years was also known as Benet College from the neighbouring church of St. Benet at which the society worshipped. In 1578 Sir Nicholas Bacon and other benefactors built a chapel for the college, to which Archbishop Parker had in 1575 bequeathed the bulk of his fine collection of plate and his valuable library of MSS. and printed books.

2. Oxford, founded in 1516 by Richard Fox, Bishop of Winchester, and lord privy seal. The main buildings consist of the quadrangle, hall, chapel, and library. In 1706 Dr Turner erected an additional building overlooking Christ Church walks. C. C. was the first college in Oxford to throw open its professorial lectures to all members of the univ., and

the first to establish an endowed chair of Greek. It has numbered among its scholars Nicholas Udall, Richard Hooker, Thomas Day, and John Keble.

Corpus Delicti (Lat., body of the offence), in the Scots criminal law means the substance of the crime or offence alleged, together with the attendant circumstances, as specified in the libel (the summons containing the prosecution's allegations). The C. D. must be satisfactorily proved before a conviction can be obtained.

Corpus Juris Civilis, literally a body of civil law, a term denoting the main body of Rom. law, compiled in the reign of Justinian (q.v.), incorporating the *Codex*, *Pandects*, *Digest*, *Institutes*, and *Novels*.

Corpuscles, **Red and White**, see BLOOD.

Corrective Labour Camps, official name of the forced labour or concentration camps in the Soviet Union. Over 200 camps are known to have existed in Russia after the Second World War. They are spread all over the country, and small camps can be found near most industrial ins. The larger camps and camp groups are situated in the remote mining and timber areas in the N. and E. All the main construction projects of the 1930's-1950's, such as canals and hydro-electric stations, were largely based on forced labour. The total number of inmates of camps is not pub.; it has been variously estimated at from 3 to 15 million. The first camps were estab. in 1918 and the system developed on a large scale during the Collectivisation of Agriculture (q.v.) and the Great Purge (q.v.). The inmates were increased by deportees from ters, annexed in 1939-40, prisoners-of-war, and deportees from Russian ters, previously occupied by the Germans, as well as from E. European states occupied by the Soviet army. The regime in the camps, very severe during the Great Purge and the war, improved markedly from 1950. After the war, and particularly after the separation of political prisoners from criminals, various political groups existed in the camps. A series of large-scale strikes and revolts in the major camp areas in 1953-5 was an important landmark in the development of post-Stalin Russia. Since 1953 the Soviet Gov. has been reducing the number and pop. of the camps. See also KARAGANDA; KOLYMA; MAGADAN; NORIL'SK; SOLOVETSKIY; VORKUTA. See D. Dallin and B. Nikolaevsky, *Forced Labour in Soviet Russia*, 1948; United Nations, *Report of the 'ad hoc' Committee on Forced Labour*, Geneva, 1953.

Correggio, **Antonio Allegri da** (c. 1494-1534), It. painter, surnamed C. from the place of his birth, a small town near Modena. Nothing very definite is known about his life. Vasari and contemporary historians record that he lived and died in poverty, but from existing documents it appears that he received a high price for his pictures, and that his relatives were tradespeople in comfortable circumstances. He is said to have studied under Francesco Bianchi-Ferrari at Modena, but his early work shows no resemblance to

that of this artist; Giambattista Lombardi, Andrea Mantegna, and C.'s uncle, Lorenzo Allegri, a local painter of little note, have also been named. Lombardi was head of the academy at Correggio, and very probably taught him anatomy. In his treatment of mythological subjects, and in his figures of children, he clearly shows the influence of Mantegna. C.'s figures of children have never been surpassed. Traces of the influence of Raphael and of Leonardo da Vinci may also be found in C.'s work, but at the same time his style is peculiarly his own. It is remarkable for chiaroscuro. The lights and shades imperceptibly glide into one another, and his exquisite, delicate colours attain perfection. In 1518 C. was engaged on frescoes for the Camera di San Paolo (the chamber of the abbess) in



ANTONIO ALLEGRI DA CORREGGIO
Engraving after a self-portrait, Parma
Cathedral.

the monastery of S. Ludovico at Parma. There he also executed frescoes for the cupola of San Giovanni, and his 'Assumption of the Virgin' for the cathedral excited the highest praise from Titian. In 1530 he returned to Correggio, where he lived till his death. He had early attracted the attention of Lady Veronica Gamba, and still retained her patronage. C. devoted himself to mythological and sacred subjects. The frescoes at Parma (1518) represent Diana, drawn in a car by white stags, with cupids peering through vines. Other mythological pieces are 'Mercury instructing Cupid before Venus,' in the National Gallery, London; 'Jupiter and Antiope,' in the Louvre; and 'Danae,' in Rome. Among his sacred pictures are famous 'Notte' (1529), a beautiful picture of the nativity in the Dresden Gallery; 'Ecce Homo,' in the National Gallery; and 'The Marriage of St Catherine,' in the Louvre. His greatest fresco work is, perhaps, that in the cupola

of the cathedral at Parma, already mentioned. The Madonna, surrounded by a host of singing and adoring angels, goes forward to meet her son, Christ. The frescoes in the cupola of San Giovanni of Christ in the clouds, with His twelve apostles seated below, are impressive in their power. See C. Ricci, *Antonio Allegri da Correggio*, 1896; S. Brinton, *Correggio*, 1900; T. Sturge Moore, *Correggio*, 1906; P. Roi, *Il Correggio*, 1921.

Correggio, It. tn. in Emilia-Romagna (q.v.), 10 m. NE. of Reggio nell' Emilia (q.v.). It has a cathedral and a fine old palace. Antonio Allegri, surnamed C. (see previous article), was b. here. Pop. 20,000.

Correlation of Organs, interdependence which appears to exist between certain structures in an organism. Instances are given in the works of Cuvier, Isidore Geoffroy Saint-Hilaire, Charles Darwin, and others, but the laws governing them are still obscure. Hairless dogs have imperfect teeth, and pigeons with short beaks have small feet. Sometimes the correlation seems particularly whimsical, as in the case of male white cats with blue eyes, which are generally deaf. The only generalisation possible is the rule that certain structures are so intimately associated that variation in one is always accompanied by variation in the other.

Correspondence Classes. Chautauqua Literary and Scientific Circle in 1878 inaugurated a system of education by C., exercises being sent out to pupils residing in all parts of the U.S.A., the work being sent back to tutors for correction and the corrected exercises and explanations returned to the pupils. Britain has adopted the same system in connection with univ. extension organisation. The Univ. Correspondence College is one of the chief institutions of the kind; it prepares pupils for London Univ. examinations, and degrees may be obtained through preparation by C. alone. The college magazine, pub. weekly, is *The University Correspondent*. Text-books are pub. in connection with the C. C. by the Univ. Tutorial Press. See also CORRESPONDENCE SCHOOLS.

Correspondence Schools provide education for children living in very remote rural areas and for adults in many countries who wish to improve their qualifications after leaving school. In Australia, for example, all the states run C. S. for children of primary school age who live in such isolated parts that it is impossible for them to be transported by bus to the nearest consolidated school or one-teacher school. There is an increase in the number of courses provided through C. S. at the secondary level. Some states now offer a full secondary school course. In New Zealand some 2250 pupils from remote areas or with some disability are enrolled in C. S. In Japan courses at the upper secondary level—both compulsory and optional subjects—are offered through C. S. Some 450,000 pupils are enrolled. Somewhat similar arrangements are made in many countries where the pop. is thinly spread. In addition C. S. provide

opportunities for adults in many countries to acquire further qualifications. In Britain, for example, external exams and diplomas of the univ. of London can be obtained through correspondence courses. There are also a number of commercial C. S. that offer courses in accountancy, journalism, commercial art, etc. Similar facilities exist in the U.S.A., where private and public univs. offer correspondence courses. See also CORRESPONDENCE CLASSES.

Corrèze, dept. of S. central France, formed of part of the auct. prov. of Limousin. The surface is tableland, hilly, especially in the NE, and is broken up by fertile riv. valleys. The chief rvs. are the Dordogne, Vézère, and Corrèze. In general the dept is infertile, but some potatoes, cereals, and chestnuts are produced. The main agric. activity is the raising of cattle, pigs, and poultry. There is some coal, and iron is mined. There are metallurgical, textile, leather, and foodstuff industries, and important hydro-electric installations. The prin. towns are Tulle (the cap.), Brive, and Ussel (qq.v.). Area 2272 sq. m. Pop. 242,800.

Corrib, Lough, in the co.s of Galway and Mayo, Rep. of I. It is the second largest lake in Ireland, 27 m. long, with an extreme breadth of 7 m. It is very shallow, and contains about 300 is.; its outline is very irregular, and it is drained by the R. Corrib into Galway Bay. It is connected on its N. side with Lough Mask, by means of a partly underground channel.

Corridor (Fr. *corridor*, from It. *corridore*; Lat. *corridorium*, from *currere*, to run), gallery or passage in a large building, on to which many different apartments open.

Corrie, see CIRQUE.

Corrientes: 1. Prov. of the Argentine rep., bounded on the W. by the Paraná R. and on the E. by the Uruguay R. The N. dist. is low and marshy, but the S. is fertile with some forests. The chief industries are connected with cattle rearing, maize, cotton, rice, tobacco, fruits (especially oranges), sugar, and timber. Its prin. riv. is the C., 150 m. long. Area 33,544 sq. m.; pop. 617,424.

2. Cap. of the above prov., on the E. bank of the Paraná, below the confluence of this riv. and the Uruguay, 480 m. N. of Buenos Aires (670 m. by rail). It is surrounded by orange groves and trades in hides, maté, cotton, wool, sugar, and tobacco. Cattle, sheep, and horse rearing, meat packing, and shipbuilding are carried on. Founded 1588; the Plaza S. Cabral has the statue of the sergeant who saved the life of the national hero, San Martín, at the battle of San Lorenzo. Pop. 64,400.

Corriere della Sera, Milan daily newspaper, founded in 1876 by a group of industrialists, and now owned by the Crespì brothers. It is independent in political outlook, and has the largest circulation of the It. dailies (500,000 copies), being mainly read by the middle class. The C. also owns an evening paper, the *Corriere d'informazione* (estab. 1945), with 3 daily eds. and a circulation

of 250,000; and 2 weeklies, the *Domenica del Corriere* (1,300,000 copies), and the *Corriere dei piccoli* (500,000), a children's paper.

Corrievrechan (Gaelic *Corrie-Bhrecain*, or Breacan's cauldron), whirlpool off Argyll, Scotland, between the is. of Scarba and Jura.

Corrigan, Michael Augustine (1839-1902), third Rom. Catholic Archbishop of New York, U.S.A. He was b. Newark, New Jersey; graduated at Mount St Mary's College, Emmittsburg (1859), and later became prof. of theology at Seton Hall College, S. Orange. In 1873 he was made Bishop of Newark by Pius IX, and in 1885 succeeded McCloskey as Archbishop of New York.

Corroboree, name applied by the aborigines of Australia to a nocturnal convention. Strange rites are performed, and there is also wild and furious dancing round the camp-fires. These C.s take place on all great occasions. It is 'the medium through which the delights of poetry and the drama are enjoyed.' It is also the occasion for gymnastic displays and religious observances and, in fact, for all sorts of festivities. See W. M. Roth, *Ethnological Studies*, 1897; B. Spencer and F. J. Gillen, *The Native Tribes of Central Australia*, 1899, and *Native Tribes of the Northern Territory*, 1914.

Corrosion of Metals, the destruction of metals by direct chemical attack, and when used in connection with iron or steel it is commonly known as rusting. The dangerous effects of C. may be the weakening of a metallic structure, as in bridges, boilers, etc., or the introduction of metallic poisons into water and foodstuffs. Some metals like gold, silver, and platinum are not easily attacked and are thus useful where the maintenance of purity is important. Their expense forces the use of comparatively cheap but more easily corroded metals such as iron, zinc, tin, and lead for many purposes. There are many types of C. but the most common is due to electrolytic action which is influenced by a large number of factors. Moist air contains water, oxygen, carbon dioxide, and certain acids, and the effect of these, singly or together, can cause C. Iron is particularly susceptible to attack and will corrode in pure water. Rusting in air is promoted by an increase in relative humidity, which must be at least 60 per cent, and presence of solid particles and acid vapours such as sulphur dioxide and carbon dioxide, although above certain concentrations the latter will inhibit rusting. Rust is mainly hydrated ferric oxide, $\text{Fe}_2\text{O}_3 \cdot \text{H}_2\text{O}$, with some basic ferrous and ferric carbonates. The impurities in the iron and the iron itself form the poles of a large number of microscopical electrolytic cells in which iron is often the anode. This enables ferrous ions to pass into solution and form insoluble ferrous hydroxide, which does not stifle the anode because the ferrous hydroxide decomposes in water to give a loose granular deposit of triferrous tetroxide (Fe_3O_4) which is not protective.

This has led to various methods for the protection of iron, such as alloying with a non-corrosive metal, like chromium or nickel, in suitable proportions. Another method is to form a film on the surface of the metal, but this film must be continuous and either be non-corrosive or must corrode preferentially. Such methods include galvanising, which is the formation of a zinc film, painting or subjecting the iron to the action of superheated steam to form an Fe_2O_3 film. This film is likely to crack owing to differences in thermal expansion and contraction compared with that of iron. A modern example of galvanic protection of iron is in the use of magnesium which is directly coupled by an electric cable to pipe lines; e.g. oil pipe lines in the Middle E., water pipe lines in England and Scotland, and gas mains in Texas. The magnesium, and zinc in the case of galvanising, becomes the anode since it is more active and higher in the electro-chemical series than iron, and so corrodes preferentially. This is known as sacrificial C. If however the iron is tin plated, the coating is relatively non-corrosive in air but is still porous and the pores cannot be closed. In moist air and salt solutions the tin is cathodic to the iron so that the iron dissolves and rusting occurs. In tinned iron containers containing fruit juices the tin is anodic to the iron. Hence the tin dissolves in the fruit juices, but tin compounds are relatively non-toxic and the amount dissolved over the usual passage of time prior to consumption of the contents is often much less than the maximum legal limit of dissolved tin. To prevent the tin dissolving fruit and meat cans are often lacquered inside. Aluminium will corrode in moist air forming a partly protective oxide film, and use is made of this by artificially thickening this oxide film by 'anodising', i.e. by electrolysis in an acid solution using aluminium as the anode. The film so formed is very resistant to abrasion, very porous and adsorbent, and the immersion of the anodised aluminium in suitable dyestuffs gives attractive finishes. The porosity can be closed by boiling in water or in sodium silicate solution, but the material is still corroded by salt.

Lead is rapidly tarnished in air, forming a superficial layer of the hydroxide and carbonate which tends to inhibit further attack. Air-free water does not attack lead, but water with dissolved air does dissolve lead slightly owing to the formation of the slightly soluble hydroxide which is poisonous, and it is important to note that the effects of lead poisoning are cumulative.

Copper is corroded by moist air, forming mainly oxide and sulphide films in industrial fns, a basic sulphate inland, and mainly basic chloride in coastal dists. The ease of formation of a sulphide film explains why copper which is to be used for electrical purposes and insulated with vulcanised rubber is first coated with tin. Copper also reacts with weak organic acids in the presence of air; e.g. it forms verdigris with acetic acid and

may give rise to poisoning if vegetables are allowed to ferment in copper utensils.

Of the metals which are not easily attacked, it must be noted that the tarnishing found on silver articles is due to a sulphide film and not an oxide film. See F. L. Bindy, *Corrosion of Lead in Buildings*, 1934; U. R. Evans, *Metallic Corrosion, Passivity and Protection*, 1937, and *An Introduction to Metallic Corrosion*, 1948.

Corrosive Sublimate, Mercuric Chloride (HgCl_2), is formed by passing chlorine over heated mercury. It is prepared on a large scale by heating a mixture of mercuric sulphate and common salt. It sublimes as a white mass, dissolves in water, readily melts, and volatiles unchanged. It dissolves without decomposition in sulphuric and nitric acids. It is a violent poison, the best antidote to which is the white of an egg or albumen, since it forms an insoluble compound with albumen. Because of its strong antiseptic properties it is widely used by taxidermists.

Corrugated Metal. Iron and other metals are corrugated in order that their rigidity and power to resist buckling may be increased. It is done by means of pairs of ridged rollers through which the metal is passed. Its most extensive use probably is in galvanised iron, i.e. zinc-plated iron, for roofs of buildings. The principle is of great value mechanically, as, for example, in flues and boilers, where the corrugation adds to the strength and increases the heating surface. It is further used as flooring for bridges.

Corrupt Practices Act, see BRIBERY; ELECTIONS.

Corsairs, pirates of the Middle Ages. They plundered ships of their own or any other nationality, their one object being to procure booty. After the discovery of America, the Mediterranean and the Atlantic Ocean, even as far N. as Iceland, became infested by them. The richly laden ships from the Indies were the especial prey of the Moors in revenge for their persecution by the Spaniards in Spain. They built citadels in Algiers, Tunis, and Tripoli, and produced great leaders like Khair ed Din (Barbarossa), Uruch and Drajnt, Turkish C. waged war upon the vessels of Christian nations. In course of time the activities of C. became recognised. Many attempts to suppress them were made by Christian govs. in the interests of their trade. But only at the congress of Paris in 1856 were the powers able to come to an agreement, and even then the U.S.A. and Mexico would give no formal undertaking. The U.S.A. and Spain did not revive the custom during the war of 1898.

Corse, see CORSICA.

Corsham, tn in Wiltshire, England, 4 m. from Chippenham; with an anct church, almshouses and Flemish buildings, extensive quarries of Bath stone, and the anct mansion of Lord Methuen called Corsham Court. Pop. 8500.

Corsica (Fr. *Corse*), large is. in the Mediterranean, forming a dept of France. It lies to the N. of Sardinia, from which

it is divided by the Strait of Bonifacio (q.v.). Its greatest length is 114 m., and breadth 52 m. It has sev. rivs., the Golo being the longest. The coast-line is rugged, and affords many bays and harbours, the most important being Porto, Sagone, Ajaccio, Valinco, St Florent, Ile Rousse, and Calvi. The climate varies from warmth in the lowlands to extreme cold in the mt regions, snow lying 6 months of the year on the highest summits. The soil is very fertile, but lack of enterprise in the inhab. makes agriculture backward. The uncultivated dists. are covered with a dense growth of arbutus, thorn, myrtle, and broom, known as the maquis. The culture of fruit, the vine, citrons, and olives, vegetables, and tobacco, also the rearing of sheep, goats, and silkworms, are the chief industries. The chief exports are wool, wood, wheat, wine, cork, tobacco, silk-worms, oranges, etc. In the inaccessible parts of the mts live a peculiar breed of sheep, called moutons, and in the E. parts wild boars and stags are found; the latter are exceedingly scarce. There are mines of anthracite, antimony, copper, and silver lead, also valuable stone, such as alabaster, jasper, marble, porphyry, red and blue granite. At Guagno, Pardinia, Guitera, and Orezza there are mineral springs. The manufs. are not of much importance, consisting chiefly of the preparation of preserved citrons, of macaroni, an extraction of acid from the chestnut bark, and the manuf. of cigars. The character of the Corsican is one of dignity and pride; he has much native courtesy, which is shown in the hospitality he extends to strangers. To his fellow countrymen he is relentless when once roused, but the custom of the vendetta (exploited in the Corsican *novelle*, *Colomba*, by Prosper Mérimée, 1840), has died out. The landscape and scenery of C. are full of freshness and novelty. Here is a corner of Algeria, there one of Italy, of Greece, of Provence. The cap. is Ajaccio, and other tns of importance are Bastia, Calvi, Corte, and Sartène (qq.v.). Area 3367 sq. m. Pop. 247,000.

History.—In early times C. was known as *Kyrrnos* (q.v.). The earliest inhabs. were probably Ligurian, and the first civilised people who estab. themselves there were Phocaeans of Ionia, who landed about 560 bc. and founded the tn of Alalia. At the end of the 6th cent. these people were driven out by the Etruscans, who in their turn had to make way for the Carthaginians, and these again were followed by the Romans. In time the Genoese came into possession, who surrendered it to the Fr., being unable to subdue the Corsicans who had risen under Gen. Paoli. Britain was appealed to for assistance, and in 1794, after hard fighting, C. offered the sovereignty to King George III of England. Brit. rule lasted for 2 years, then C. passed once more into the hands of France, and since the settlement of 1815 they have remained united. On 11 Nov. 1942, after the successful landing of allied forces in N. Africa, Hitler sent Ger. troops into un-

occupied France, and invited It. troops to occupy C., asserting that the move was necessary to forestall Allied plans for an attack on the is. and on the S. coast of France. Pétain (q.v.) made a formal protest, but the Vichy Gov. made no show even of passive resistance. Fr. troops (non-Vichy) liberated C. on 4 Oct. 1943. Ger. consolidation on the is. having been prevented by the prompt action of local patriots before the landing of Free Fr. forces. The It. part of the garrison held Bastia long enough to get their forces away. The conquest of C. by the Allies was a strategic blow against the whole Ger. position in Italy. See ITALIAN FRONT, SECOND WORLD WAR CAMPAIGNS ON. *An Account of Corsica*, by J. Boswell, appeared in 1768. See also Prosper Mérimée, *Notes d'un voyage en Corse*, 1840; F. Girolami-Carona, *Géographie générale de la Corse* (Ajaccio), 1893; J. M. Jacobi, *Histoire générale de la Corse*, 2 vols., 1833-1835; L. H. Caird, *History of Corsica*, 1899; R. Le Joindre, *La Corse et les Corscs*, 1904; C. de Cesari-Rocca and L. Villet, *Histoire de Corse*, 1916, 1927; P. Alloge, *Histoire du peuplement de la Corse*, 1926; D. Archer, *Corsica, the Scented Isle*, 1929; A. R. Dugmore, *Corsica the Beautiful*, 1930; A. Ross and J. Minton, *Time was away: a Notebook in Corsica*, 1948.

Corsicana, cap. of Navarro co., Texas, U.S.A., on the Houston and Texas Central and the St Louis SW. railroads. It is a trading centre for cotton, wool, oil, and agric. produce. Pop. 19,200.

Corsite, variety of diorite (q.v.) found near Ajaccio in Corsica; known also as Napoleonite. It forms a beautiful ornamental stone on cutting and polishing, and is composed of anorthite feldspar, hornblende, and a little quartz.

Corslet, light armour (q.v.) for the upper part of the torso; later worn as an alternative to the cuirass (q.v.) by soldiers of the 16th and 17th cents.

Corso, It. word, meaning race or race-course, used alike of a slow procession of handsomely decorated equipages, and of the mad gallop of a frightened riderless horse. The word has been given to various streets, generally the main street, in some It. tns, through which processions frequently take place. The best known is the C. (anc. Via Flaminia) in Rome, which is the scene of the famous carnival.

Corsen, Wilhelm Paul (1820-75), Ger. classical scholar and philologist. In 1858-59 he won the prize, awarded by the Royal Prussian Academy of Sciences, for a thesis on Lat. pronunciation and accent with his *Ueber Aussprache, Vokalismus, und Betonung der Lateinischen Sprache*.

Corstopitum, see CORRIDGE.

Cort, Cornelis (1536-78), Dutch designer and engraver. He studied engraving with Jerom Cockx of Antwerp, and about 1565 he went to Venice and worked for Titian, executing copper-plates of 'St Jerome in the Desert', 'Prometheus', 'The Magdalen', and others. At Rome he founded a famous school of engraving. His engravings helped to popularise works by Raphael, Titian, Clovio, Muziano, Baroccio, and other painters.

Cort, Henry (1740-1800), ironmaster, who invented a process, called puddling, of purifying iron, which has been superseded by the invention of Bessemer (q.v.) steel.

Cortaderia, a genus of S. Amer. tall perennial grasses, family Gramineae, about 6 species; *C. argentea* is the pampas grass (q.v.).

Cortázar, Daniel (1845-1927), Sp. mathematician, geologist, and lexicographer, b. Madrid. His 14,000 amendments to the *Dictionary of the Language* were a great influence in the purification and stabilisation of written Spanish.

Corte, tn in central Corsica, 35 m. NE. of Ajaccio, built on a steep rock which overhangs the Tavignano and the Restonica. Marble is found in the vicinity, and there is a trade in fruit and wine. The tn is a tourist centre. Pop. 6020.

Cortés, Hernán or **Hernando** (1485-1547), conqueror of Mexico. He was b.

his mistress. She was of great help to him on his adventures, and acted as interpreter. Moving a little to the N. he founded the colony of Villa Rica de Vera Cruz, and then, marching inland, defeated the Tlascalans, and destroyed the tn of Cholula, whose inhab. were plotting against him. C. and his men were now regarded as descendants of the sun, destined by prophetic tradition to come from the E. and subdue the Aztecs. For this purpose the Tlascalans and Cholulans joined him in a march on Mexico. On 8 Nov. 1519 C. entered Tenochtitlan, the cap. of Mexico, and was received with honour by the Aztec chieftain. But, hearing that the native leaders were conspiring against him, he captured Montezuma (or Moteculizoma) by a trick, and held him as a hostage. In April 1520 C. heard of an expedition sent by Velásquez against him, and headed by Narváez, and set out with a small band for San Juan de Ulloa. He took Narváez prisoner and persuaded the Spaniards to join his standard. During his absence, however, the Aztecs had revolted against his lieutenant, Alvarado. In the revolt Montezuma lost his life, and C. returned to the city only to retreat with all his men on 30 June, *la noche triste* (the unhappy night). C. drove off the pursuing Mexicans at Otumba, 7 July 1520, and retreated to Tlascala to recuperate. In the following year he laid siege to the stronghold of the Aztecs, and, after three months' fighting, he again entered their city. C. rebuilt it and filled it with Sp. colonists, and, using it as his headquarters, sent out expeditions to the Gulf Coast and to Tampico. His enemies in Spain and Cuba were at work, however, and in 1528 Estrada arrived to take command, and C. was obliged to return to Spain. There he was royally received and created marquis of the Valle de Oaxaca. In 1530 he returned to Mexico, but, as he was no longer governor, he found that his schemes were continually being thwarted. In 1536 he explored the coast-line and discovered lower California. He returned to Spain in 1540, but obtained no redress for his grievances, though he was received with honour. He accompanied Charles V on his disastrous expedition to Algiers, 1541. He d. in retirement near Seville, and was buried there, but his remains were subsequently reinterred in Mexico. See W. H. Prescott, *History of the Conquest of Mexico*, 1843; the *Dispatches*, trans. G. Folsom, 1843; Sir A. Helps, *Life of Cortés*, 1871; F. A. Ober, *Hernando Cortez*, 1905; H. D. Sedgwick, *Cortés the Conqueror*, 1927; C. Walker, *Guatemala, Last of the Aztec Emperors*, 1934; and S. de Madariaga, *Hernán Cortés: Conqueror of Mexico*, new ed. 1955.

Cortés, name given in Spain and Portugal to the representative assembly of the nation. Formerly there were different C. representing various dists. of Spain, the chief being the C. of Castile and that of Aragon, each with its own constitution, which was frequently modified. During the Fr. invasion under Bonaparte it framed a new constitution, known as the



HERNÁN CORTÉS

at Medellín, a vil. of Estremadura in Spain, and was first sent to study law at Salamanca. His high spirits and love of adventure led him westwards, so that in 1504 he sailed for Santo Domingo to join his relative, Ovando, governor of Hispaniola. In 1511 he distinguished himself under Velásquez in his expedition for the conquest of Cuba, and he subsequently became alcalde in Santiago. In 1518 C. was chosen by Velásquez to command an expedition into the interior of New Spain (Mexico), which had just been discovered by Grijalva. He set sail on 18 Nov. with a fleet of seven vessels from Santiago de Cuba. Early in the following year he reached the R. Grijalva, and captured Tabasco, after a fierce fight with the natives. Velásquez, meanwhile, had revoked the commission of his lieutenant, but C. refused to turn back. He landed at San Juan de Ulloa, where he took many captives, one of whom, Marina, he made

'Constitution of 1812.' See SPAIN, *Constitution and History*.

Cortisone, see HORMONES; SUPRARENALS.

Cortland, co. seat of C. co., New York, U.S.A., on the Tioughnioga R., in a dairying and cattle-breeding region, with manufs. of wire netting, wire cloth, furniture, etc. Pop. 18,150.

Cortona, Pietro (Berettini) da (1596-1669), It. painter and architect, so called from his bp., Cortona, his real name being Berettini. His prin. works are in the Barberini and Sacchetti palaces, Rome, and in the Pitti palace, Florence. His 'Nativity' attracted the notice of Pope Urban VIII, and he enjoyed the patronage of successive pontiffs. His architectural works include the facade of Santa Maria in Via Lata, and the church of San Martino (Rome), in which he was buried. He wrote a treatise on painting.

Cortona, It. tn. in Tuscany (q.v.), 14 m. SSE. of Arezzo (q.v.). Anciently, it was one of the cities of the Etruscan Confederation (see ETRURIA), and it has many

Cape Finisterre (q.v.), the most westerly point in Spain. Agriculture and industry are well developed, and the prov. is rich in minerals. Area 3050 sq. m. Pop. 794,850.

2. (Eng. Corunna, also **The Groynes**; Fr. **La Corogne**; Rom. **Ardobium Cauronium**) Sp. seaport, cap. of the prov. of L. C., lying on a narrow peninsula between 2 bays. It was once, probably, a Phoenician settlement. In 1588 the Sp. Armada (q.v.) rested here on its way to England, and in 1589 part of the tn was burnt by Drake and Norris (qq.v.). Sir John Moore (q.v.) was killed here in 1809 in battle against the Fr. L. C. has a large and busy harbour, used by transatlantic liners, is a military centre, and has many buildings of interest, including Romanesque and Baroque churches. On a cliff N. of the tn stands the Tower of Hercules, a lighthouse dating from the time of Trajan. The 'old tn' still has part of its anct. walls. The prin. industries are fishing and canning, and textiles, tobacco, and glass are manuf. Pop. 142,500.



THE HARBOUR, LA CORUÑA

Etruscan and Rom. remains, including its immense city walls. A medieval castle, the highest point of C., stands 2130 ft above sea level. There is an 11th-cent. cathedral (restored, 18th cent.), which has paintings by Luca Signorelli (q.v.), a native of the tn, and there are other fine churches and anct. palaces. The museum contains Egyptian and Etruscan antiquities, and there is an important library. Near by there are marble quarries. Pop. (tn) 3700; (com.) 31,900.

Cortracum, see COURTRAI.

Corumbá, port of Mato Grosso prov., Brazil, on the r. b. of the R. Paraguay. With the coming of the Bolivia-Brazil railway and the new industries, it is an important trading centre exporting products from Brazil's interior and from E. Bolivia. There are extensive manganese deposits at Morro do Urucum (15 m. SSE.). There are metal works, lumber mills, meat packing plant, and a blast furnace. Pop. 30,000.

Coruña, La: 1. Sp. prov., in Galicia (q.v.), on the Atlantic coast, containing

Corundum, aluminium ore, consisting solely of the oxide, Al_2O_3 . It possesses a high sp. gr., and is only inferior to the diamond in hardness. It crystallises in the hexagonal system. The sapphire, oriental ruby, oriental topaz, oriental emerald, and oriental amethyst are all forms of C., although the name is usually reserved for the coarser specimens. The precious forms owe their value to the lustre of their polished surfaces, and their beautiful colours. The ordinary forms are dull in appearance, but vary in colour—green, blue, and red, inclining to grey. Emery is an impure form of C. containing oxide of iron. C. is used for cutting and polishing all gems except the diamond, which is too hard for it. Found in (ruby) Burma, Siam and Ceylon; (sapphire) Kashmir, Ceylon, Burma, Siam, Australia, and the U.S.A.

Corunna, see CORUÑA, LA.

Corvallis, city in Benton co., Oregon, U.S.A., seat of Oregon State College. It is a processing and trade centre for a dairying, fruit, agric., and timber area. Pop. 16,207.

Corvée, term applied to unpaid and forced labour paid by a tenant to his lord, or by subjects to a state. The system of unpaid labour dates from the earliest times, and was fully developed in the rep. of Rome. Instead of paying taxes, the citizens performed *operae publicae*, which consisted chiefly of keeping roads and bridges in good repair. The Rom. landlords could also demand free labour on their estates for a certain number of days from their tenants or *coloni*. The freedmen also were under certain obligations as a condition of their freed state, and their *operae officiales* generally consisted of unpaid work on their landlord's estate. In the Middle Ages the C. became a recognised part of the feudal system. The fixed services that the serf was obliged to pay regularly were called *operae rigae*. Those that were only demanded in times of exceptional stress were called *operae corropatae*, i.e. services or works requisitioned, from Lat. *rogare*, to request. This term became corrupted into *corvatae*, and later *corvetae*, and finally developed into the present form C., which became the general term for all such unpaid labour. The tenants and serfs performed labour, such as working in the fields, threshing corn, etc., in payment or partial payment of rent, small allotments, called *mansai*, being distributed among them. They repaired high roads, bridges, churches, and castles, entertained messengers, and carried dispatches, as a sign of fealty to their feudal lord. C. could also include conscription. C. existed in France till the Revolution, of which it may be said to have been a cause. It was revised (1824, 1836, and 1871) under the name of *prestation*, when it was enacted that every able-bodied man was responsible for the condition of his local roads, and must give 3 days' labour or its equivalent in money to keep them in repair. C. has been used from the earliest times as a means of irrigating the canals and reaping the harvest. The great pyramids were probably built by forced labour. By this means the Nile barrage above Cairo was constructed (1841-67). C. labour was abolished under Brit. rule in 1891. See N. D. Fustel de Coulanges, *Histoire des institutions politiques de l'ancienne France*, 1875-92.

Corvette (Lat. *corbita*, a slow ship of burden, from *corbis*, basket), sailing warship smaller than a frigate, having three square-rigged masts and carrying her broadside guns under a covered deck. In the Second World War the term was revived for small escort vessels with anti-submarine devices. Large numbers of Cs were built in Brit. and Canadian shipyards, and were instrumental in reducing losses from U-boat action in the Atlantic convoy. They are now known as frigates (q.v.).

Corvey, or **Korvey**, famous Benedictine abbey in Germany, on the Weser (q.v.), near Höxter (q.v.). It was founded in the 9th cent. by monks from Corbie (q.v.) in France, under the patronage of the Emperor Louis I. Its abbots were chosen

from the princes of the Holy Rom. Empire. The abbey was under the direct supervision of the pope until 1793, in which year Pius VI converted it into a bishopric. It was secularised in 1803, and was held successively by Nassau, Orange, Westphalia, and Prussia. In 1811 its library of over 150,000 vols. was given to Marburg Univ.

Corvinus, Matthias, see MATTHIAS CORVINUS.

Corvisart des Marest, Jean Nicolas, Baron de (1755-1821), Fr. physician, b. Dricourt, Champagne. He qualified in medicine at Paris, 1785. He is remembered especially for his *Nouvelle Méthode pour Reconnaître les Maladies Internes de la Poitrine par la Percussion de Cette Cavité*, 1808, a trans. of Auenbrugger's (q.v.) neglected classic on percussion; he brought this method of diagnosis into general use. His *Essai sur les Maladies et les Lésions Organiques du Cœur et des Gros Vaisseaux*, 1806, was the outstanding book on cardiovascular disease in its time. C. was personal physician to Napoleon, who created him a baron.

Corvus, Marcus Valerius (c. 370-270 BC), soldier famous in early Rom. hist. His surname was attributed in popular story to the fact that a raven (Lat. *corvus*) settled on his helmet while he was locked in combat with a gigantic Gaul, and assisted him by flying in the face of his foe. C. was twice dictator (342 and 301), and between 348 and 299 was consul six times.

Corvus, member of the family of Corvidae, such as the rook, raven, jackdaw, and various kinds of crow.

Corvus (Raven or Crow), anct S. constellation described by Ptolemy (2nd cent. AD). It consists of four prin. stars of the second and third magnitude, and is situated S. of Virgo, between Libra and Crater. The constellation is sometimes called Hydra et Corvus, as strictly it contains part of the body of Hydra.

Corwen, par. and mkt tn of Merioneth, N. Wales, 12 m. ENE. of Bala, on the r. b. of the R. Dee and at the foot of the Berwyn Mts, a favourite resort with tourists and anglers. Pop. 2500.

Cory, William Johnson (1823-92), schoolmaster and poet, b. Torrington, Devon, son of Charles Johnson. Educ. at Eton and King's College, Cambridge, of which he became a Fellow, he was an assistant master at Eton for over 26 years. In 1872 he inherited an estate, assumed the name of Cory, and settled at Hampstead. His collection of lyrics, *Tonica*, was first pub. anonymously in 1858, and *Extracts from Letters and Journals* was ed. in 1897. He was a skilful Lat. and Gk versifier, his best-known poem being 'Heracitus,' a paraphrase from Callimachus. He also wrote the 'Eton Boating Song.' See life by F. C. Mackenzie, 1950.

Coryate, or **Coryatt**, Thomas (c. 1577-1617), traveller, son of George C., rector of Odecombe and a Lat. verse writer, b. Odcombe, Somerset. He was educ. at Westminster School and at Oxford, and became a court fool to James I. *Coryate's*

Cruditius hastily gobbled up in Five Months' Travel, 1811, is an account of his travels on foot through France, Italy, Switzerland, Germany, and Holland, which began in 1608. He hung up the boots which he used on this tour in Odcombe church. In 1612 he set out again and passed through Constantinople, Greece, Alexandria, Cairo, Jerusalem, Babylon, Lahore, and Agra, but died at Surat. See A. & Wood, *Athenae Oxonienses*, II, 1691-2, 1813-20; McLehose's ed. of the *Cruditius*, 1905.

Corybantes, priests of Cybele or Galli (q.v.) and Attis in Phrygia, who worshipped with wild, ecstatic orgies to the accompaniment of drum and cymbal. They were also called Curetes (q.v.). Cybele being identified with the Cretan Rhea.

Corydalis, a genus of ann. or perennial herbs, native to N. temperate regions; family Papaveraceae; about 20 species. Many are grown as rock garden plants.

Corygaum, see KOREGAON.

Corylus, genus of Betulaceae, contains about 15 species, which grow in N. lands. *C. avellana* is the common hazel-nut found in Europe, Asia, and America; *C. colurna*, the Constantinople nut of Asia Minor; *C. rostrata*, the horned hazel-nut of the Carolinas; *C. chinensis*, the Chinese hazel; and *C. tibetica*, the Tibetan hazel. See COB-NUT.

Corypha, genus of tropical palms, contains 6 species with gigantic fan-shaped leaves. *C. umbraculifera*, the tala or talipot palm, is a native of Ceylon which serves sev. useful purposes. The trunk reaches a height of 100 ft., and the leaves are 14 ft. broad and 18 ft. long; fans and umbrellas are made from the leaves, which are also used in thatching and employed as writing material; while the pith of the trunk furnishes a sort of flour from which bread is made. *C. talliera* is a stately species which inhabits Bengal and is known as the tara or talliera; the natives write on the leaves with a steel style.

Coryphaena, genus of perciform fishes, commonly known as dolphins, represents the family Coryphaenidae. Dolphin fishes are large and brilliantly coloured, with hues of metallic yellow, blue, and silver; their bodies are elongated, compressed, and covered with small scales. In diet they are carnivorous and feed largely on flying fish. The length to which they usually attain is about 6 ft. *C. hippurus* inhabits the warmer parts of the ocean.

Coryphaeus (Gk *koruphē*, head), leader of a Gk chorus. Hence the word is applied to any leader in the realm of science or art. At Oxford the word is used to denote the assistant of the choragus in the musical praxis, founded by Dr Heather.

Corystes, brachyurous crustacean, found in the seas of Europe. *C. cassivelaunus* is a crab commonly seen on the shores of France and England, especially at Plymouth, and the carapace is marked like the face of a human being.

Coryza, catarrh of the mucous membrane lining the nasal passages, commonly called cold in the head. See COLD.

Cos, Kos, Stanko, or Istanku, is. some 25 m. long, with an area of 111 sq. m., at the mouth of the Gulf of Haicarnassus, in the Aegean Sea, off the SW. coast of Asia Minor. The chief products are grain, wine, olive oil, vegetables, and honey. There is a small Turkish minority. Near Cos, the only tn. lie the ruins of Asclepius's temple, the precincts of which were marked out sev. centuries BC. Brit. forces occupied C. on 16 Sept. 1943, but the Germans recaptured the is. on 3 Oct. Pop. 19,100. See also DODECANESE.

Cosa, Juan de la (c. 1450-1510), Sp. navigator and cartographer, thought to have been b. at Santona in Calabria, and d. at Tabasco in Darien. After having explored parts of the W. coast of Africa, he accompanied Columbus on his famous voyage of discovery in 1492, acting as pilot. He held the same position under Alonso de Hojeda in 1499, and in 1504 himself led an expedition in N. America; in 1509 he was appointed *alguazil mayor* over Uraba (Darien). He was killed in the following year during a skirmish between the Spaniards and the Indians. He executed two very interesting coloured maps on vellum, one marking the Sp. dominions acquired in Africa in 1500, and the other showing the lands discovered by Columbus and his successors.

Cosbuc, George (1866-1918), Rumanian poet. He began as a literary journalist. His first book was pub. in 1893. His poems, optimistic and vigorous, depict country life or Rumania's heroic past. He trans. the *Aeneid*, *The Divine Comedy*, and Byron's *Mazeppa*.

Coscinomaney (Gk *koskionon*), divination by means of a sieve and a pair of shears, employed in ant. times for the discovery of thieves and other suspected persons. The sieve was supposed to tremble or move round when the name of the guilty person was mentioned.

Cosecant, see TRIGONOMETRY.

Coseguina, volcano of Nicaragua, near the Gulf of Fonseca, not far from the Pacific Ocean. The eruption of 1835 was one of the greatest ever known in geological hist., and reduced it to 2776 ft. from a former 10,000 ft.

Cosel, see KOZLE.

Coseley, industrial tn. of S. Staffordshire, England, manufacturing metal products of all kinds. Pop. 32,000.

Cosenz, Enrico (1812-98), It. soldier and politician, b. Gaeta. He fought against the Austrians in Upper Italy (1848), distinguishing himself at the defence of Venice. On its surrender he took refuge in Turin, but returned to join one of Garibaldi's regiments, the Hunters of the Alps, of which he became colonel in 1859. Under the dictatorship of Garibaldi he was appointed minister of war. He commanded an attack on Rome in 1870. From 1881 till 1893 he was chief of the general staff of the It. Army.

Cosenza: 1. Prov. of Italy, in N. Calabria (q.v.). It is the N. part of the 'toe' of Italy, and is bordered on the W.

by the Tyrrhenian Sea (q.v.) and on the E. by the Gulf of Taranto (q.v.). It is mainly mountainous and contains some high ranges of the S. Apennines (q.v.), but is bisected SW.-NE. by the broad, fertile valley of the Crati and its tribes. The mts are thickly forested, and tin, lead, silver, and other minerals are found. The princ. tns include C. and Castrovillari (q.v.). Area 2620 sq. mi.; pop. 709,000.

2. (ancient *Consentia*) It. tn, cap. of the prov. of C., at the confluence of the Crati and the Busento, 88 m. NNE. of Reggio di Calabria (q.v.). The old part of the tn has steep and narrow streets; the modern part is well laid out and has good buildings. There is an archiepiscopal cathedral (12th-20th cents.). Silk, leather goods, furniture, and pottery are manuf., and there is a trade in cereals, fruit, olive oil, and cloth. Pop. (com.) 57,300.

Cosgrave, William Thomas (1880-), Irish statesman, president of the executive council of the Irish Free State, 1922-32, son of Thomas C., tn councillor of Dublin. He was educ. at the Christian Brothers' School, and engaged in the grocery trade; became a member of the Dublin Corporation in 1909, and from 1916 till 1922, when he retired from the corporation, was chairman of its finance committee. In 1913 he joined the Irish volunteers, and sided with the rebellious section in Aug. 1914. He was in the Easter rising in Dublin in 1916; and, on capture, was detained in Frongoch Camp, Morioneth, till Christmas. In 1917 he was elected Sinn Féin M.P. for Kilkenny city; and from Dec. 1918 till 1922 he was M.P. for the N. div. of Kilkenny co. He was elected in 1922 to the first legalised Dail Eireann for cos. Carlow and Kilkenny, which he represented till 1927; but in 1919 he joined those members of parliament who constituted themselves the revolutionary Dail, and held the post of minister for local gov. in the revolutionary cabinet—consequently he was among the proscribed in the time of the Black-and-Tans. From Jan. 1922 he was minister for local gov. in the Irish Free State set up by the treaty. He acted as deputy for President Griffith during the absence of the latter in London in 1922; and after Griffith's death in Aug. and the assassination of his successor Michael Collins (q.v.) the same month, C. was chosen president. In 1923 he represented the Irish Free State at the League of Nations Assembly and at the Imperial Conference. He became member for Cork in the Dail elected 1927; and in 1928 he signed the Kellogg Pact and visited U.S.A., where he was received by the president, and Canada. After de Valera's party, Fianna Fail, came into power in 1932, he led the Fine Gael opposition until 1944.

Coshery, or Coshering, was the ancient feudal right of an Irish chief to quarter himself and his retainers on his tenantry at his own pleasure.

Cosimo (Cosmo) I. (1519-74), Duke of Florence, afterwards Grand Duke of Tuscany, was the son of Giovanni de' Medici. The elder branch of the house of Medici

became extinct (1537) and C., who was descended from a collateral branch of the house, was proposed as successor and supported by the Emperor Charles V. C. defeated his enemies at Montemurlo and became absolute lord of Florence. He was a harsh and ruthless ruler, but succeeded in establishing the independence of Tuscany. In 1552 he added Piombino and the is. of Elba to his estates, and in 1555 captured Siena, which, however, was allowed to retain its municipal institutions. In this way he united Tuscany under one gov., and in 1569 he received from Pius V the title of grand duke. C. was a patron of art and literature, and founded the Florentine academy and the Accademia del Disegno, and restored the univ. of Pisa.

Cosimo, Piero di (1462-1521), It. painter, b. Florence. He was a pupil of Cosimo Rosselli (q.v.), and afterwards the master of Andrea del Sarto (q.v.). Leonardo exercised great influence over him. A painter of whimsical imagination, he delighted in picturing pagan, half-human creatures, satyrs and centaurs. Vasari mentions various pictures of his in Florence, among which is the 'Perseus and Andromeda' (Uffizi Gallery), full of fine detail, and showing a typically fantastic dragon. Some of his best works are 'Death of Procris' (National Gallery); 'Coronation of the Virgin' (Louvre); and 'Venus, Mars, and Cupid' in Berlin. See R. Langton-Douglas, *Piero di Cosimo*, 1946.

Cosimo de' Medici, see MEDICI.
Cosin, John (1594-1672), Bishop of Durham, b. Norwich, educ. at Norwich Grammar School and Caius College, Cambridge. A friend of archbishop Laud, and a High Churchman. He first became known as an author in 1627, when he pub. his *Collection of Private Devotions*. In 1634 he was made master of Peterhouse, Cambridge; in 1640 vice-chancellor of the univ., and dean of Peterborough. For nineteen years he was an exile in France, being denounced by the Puritans for his extreme theological views, though opposed to Rom. Catholicism; he was deprived of his benefices. But at the Restoration he received his preferments back, and became Bishop of Durham, 1660. He had a large part in the revision of the Prayer Book of 1661-2.

Cosine, see TRIGONOMETRY.

Cöslin, see KOSZALIN.

Cosmas and Damian, Sts (d. c. 303), patrons of medicine. They were Arabians by birth, and practised as physicians at Aegae in Cilicia, where they suffered martyrdom under Diocletian. Their relics were brought to Rome; they are mentioned in the Canon of the Mass; and their feast is on 27 Sept.

Cosmas Indicopleustes, merchant and traveller of Alexandria, who lived during the 6th cent. During his early life he visited Abyssinia, W. India, Ceylon, and other places. He eventually became a monk, and during his seclusion wrote in Gk a work in twelve books called *Topographia*, 548. This was trans. in 1897 into Eng. by the Hakluyt Society. In the work he propounds absurd theories as to the shape of the earth, denying that it

is round, and upholding the scriptural account of the world. Some people think he was a Nestorian.

Cosmetics (from Gk *kosmein*, to adorn). The word is applied to preparations used for improving the appearance of the skin or emphasising the features of the face or the beauty of the finger-tips. Jars and bottles for containing C. and implements for applying them have been found among the remains of all the ancient civilisations. Face powder, made of rice or semolina powdered, or of chemical compounds, has been widely used for giving a matt surface to the skin, and recently pastes mixed with gum have been used for the same purpose. Kohn (q.v.) is used in some parts of the E. for shading the eyelids in order to make the eyes appear bigger; henna (q.v.) for staining finger-tips and toes. Rouge powder or paste is used by W. women for colouring the cheeks, and at some periods has also been worn by men. The second decade of the 20th cent., which saw the widespread emancipation of women, saw also a great increase in the use of C., especially sticks of rouge-paste—'lip-sticks'—for reddening the lips, and varnish for reddening the finger-nails and toe-nails. C. have always been used by actors and actresses to give a different character to the face, or to counteract the effect of strong lights, which deaden the look of the skin, and to help the features and facial expression to be visible from a distance. C. are also used to clean, preserve, and nourish the skin.

Cosmic Radiation. Gases are nearly perfect insulators of electricity under ordinary circumstances, and owe what little conductivity they possess to the presence of relatively small numbers of charged molecules or ions. Some ions are continually produced in a gas by radioactive materials in it or in the walls of the containing vessel, but experiments dating from 1903 (Rutherford, McLennan) showed that not all the ions are produced in this way, and that some are due to the action of an extremely penetrating radiation capable of passing through many feet of lead or thousands of feet of water. This radiation is now called the C. R., and has a penetrating power enormously greater than that of X-rays or any other known radiation. Its source is at present uncertain; but it comes from outside the earth's atmosphere, and certainly from outside the solar system. Its intensity at high latitudes is greater than at the equator, and at any locality the ionisation produced by it increases with altitude to about 50,000 ft and then diminishes again. The primary radiation entering the atmosphere apparently consists chiefly of protons, or positively charged hydrogen atoms, travelling at enormous velocities. The average energy of a cosmic ray when it strikes our atmosphere is more than a thousand times that of a radioactive particle, i.e. 6 Gev or 6,000 million electron volts, and occasionally particles are observed with energies up to 10^{11} electron volts. In the atmosphere these produce showers of mesons (q.v.), particles whose

mass is between that of an electron and a proton, and also hyperons (q.v.), which are between one and two times the mass of a proton. They may be negatively or positively charged or neutral, and break up or decay after very short lives between 10^{-11} and 2×10^{-8} sec., into other particles or quanta of gamma rays (q.v.) which ionise the air. They may also interact with the atoms in the air with the same result. See P. M. S. Blackett, *Cosmic Rays*, 1936; R. A. Millikan, *Cosmic Rays and Mesotrons*, 1939; J. G. Wilson, *About Cosmic Rays*, 1948; G. D. Rochester and J. G. Wilson, *Cloud Chamber Photographs of the Cosmic Radiation*, 1952.

Cosmo I., see COSIMO.

Cosmogony, theory of the origin of the universe and its inhab., the term being usually restricted to mythological accounts as distinct from more scientific or philosophical theories which are treated under cosmology (q.v.). In all races except among the very lowest type of savage some C. is found in their mythology or theology. There is a surprising variety in the various explanations, the only common ground seeming to be that water is usually regarded as the starting-point, from the depths of which the land has been drawn up by some supernatural power. Among other conceptions may be mentioned that of the Egyptians who conceived of a world egg, and the Hindu tortoise supporting elephants supporting the world. Then the Polynesian conception involved an air god Tangaloa, hovering over the waters. But in the Babylonian C.s deciphered by George Smith, and also perpetuated in the Gk of Herodotus, we arrive at startling similarities to the creation story as told in Genesis 1. The Zoroastrian conception involved a personal deity creating at his own free will. Again, one of the old Phœnician C.s refers to organic matter as being due to spontaneous emanations. Modern cosmogonists are divided naturally into two great camps, according as they are Theists or Pantheists. A belief in Theism almost inevitably leads to a C. which explains the creation of matter and order and life as being the outcome of the omniscient will. Pantheism, on the other hand, will lead to a belief in the universe as being itself the deity, and this will lead to a belief in matter as having existed from eternity. Apart from these C.s, the problem, as narrowed down to the origin of our own globe and its system, and similar systems, has occupied men's minds considerably. Laplace, on observing the motion and relationship of the planets, was able to lay down the foundations of the nebular theory or hypothesis (q.v.) for which Herschel collected so much evidence, and of which physicists are not altogether sceptical even to-day. Another theory is that the earth has originated from meteorites. Thus, in so far as C. touches modern science at all, it can be seen that the tendency would be to trace backwards the causes and effects, thus reaching back to the early stages in cosmic growth, but not to the actual creation itself. This after all was the standpoint of the old philosophies, for

Plato recognised a personal creator, and Aristotle postulated an uncaused cause, Democritus, on the other hand, in strange similarity to some modern scientists, conceived a self-created universe, which sprang from a fortuitous concourse of atoms. See also ADAM; CREATION; MATERIALISM; THEOGONY; and the various religions. See J. C. Smuts, *Holism and Evolution*, 1926; Sir J. Jeans, *Astronomy and Cosmogony*, 1929; W. lt. Inge, *God and the Astronomers*, 1933.

Cosmology, variant of cosmogony, both terms denoting an account of the origin or evolution of the universe or of its orderly development out of a primordial chaos. The word cosmogony, however, is now usually limited to mythological accounts of the genesis of the world and of mankind, while C. is applied to all those accounts which have a more scientific or philosophical value. Philosophy, as a term of general application, was not restricted by Aristotle (or his successors) to logic, aesthetics, psychology, and ethics, and he includes under that title all his physical inquiries. After the synthesis of knowledge by Aquinas in the Middle Ages the term philosophy ceased to be applied to inquiries concerned with the particulars as such, and the details, e.g. of physics, were left to the scientific specialists, while philosophy limited its inquiries to the relation of the physical universe to the ultimate ground, origin, or author of things. This inquiry was long entitled rational C. and may be said to be part of the general science of metaphysics. C., as defined above, may be illustrated by some of the more widely known attempts by philosophers or scientists to explain the origin or evolution of the world from chaos or formless void. Empedocles established earth, air, fire, and water as the four elements (though the word element is not used by him). This, in his view, explained the infinite variety of the world, and generation is merely change of composition. Anaxagoras differed from his predecessors in regarding mind (*nous*) as a substance which enters into the composition of living things and distinguishes them from dead matter. He was impressed by the fact that the movement of the elements was not haphazard, but gave birth to an ordered and harmonious world. With the Manichaeans the forming of the world is in itself the beginning of the deliverance of the 'imprisoned elements of light,' and the world is represented as an orderly structure of various heavens and various earths, which is borne and supported by the aeons, the angels of light; and in the sun dwells the primal man himself, as well as the glorious spirits which perform the work of redemption; while in the moon the mother of life is enthroned. Descartes supposes the existence of matter and the laws of motion, and then concludes that if all of this had been created by God, the resulting world would have resembled our world, including the planets, their forms, sizes, organisation, the laws of gravity, the nature of light, and all the other elements with which we are familiar. Herschel

thought that gravity shows that bodies are urged downwards by some force or effort, or that there is a will existing somewhere directing the action; and he attributes consciousness to this will—which consciousness Schopenhauer denies. Kepler's idea of the universe, like the Pythagorean cosmos, was threefold—consisting of the centre or sun, the surface or sphere of the fixed stars, and the intermediate space occupied by ethereal matter. See also NEBULAR HYPOTHESIS.

The cosmological argument for the existence of God is a form of first-cause argument, which is itself derived from Aristotle's argument of the unmoved mover. The first-cause argument is superficially simple—it points out that everything finite has a cause, which in turn had a cause, and so on. This series of previous causes cannot be infinite, and the first term in the series must itself be uncaused, since otherwise it would not be a first term. There is therefore an uncaused cause of everything, and this is obviously God. The argument takes a somewhat different form with Leibnitz: he argues that everything in the world is 'contingent,' i.e. it would be logically possible for it not to exist. According to him everything has a sufficient reason; therefore the universe as a whole must have a sufficient reason, which must be outside the universe; this sufficient reason is God. The ultimate assumption of his argument is that the forces of the universe are in the hands of a perfectly wise intelligence, and that, as in man there is a rational power of initiation and guidance, so in the world as a macrocosm there is a primal reason which governs the movements and coordinates them to a desirable end. Kant, however, holds that this cosmological argument depends on the ontological. If the existence of the world can only be accounted for by the existence of a necessary being, then there must be a being whose essence involves existence, for that is what is meant by a necessary being. But if it is possible that there should be a being whose essence involves existence, then reason alone, without experience, can define such a being, whose existence will follow from the ontological argument, for everything that has to do only with essence can be known independently of experience.

C. also embraces the biological speculations of Darwin respecting the ultimate origin of living things as influencing anthropological speculation generally, and it extends his concept of self-preservation beyond the organic world to the cosmos as a whole. Coming to the speculations of Darwin's contemporaries we may mention Czolbe's mechanistic view of the world order, which he combined with teleological conceptions of the world. Lotze defends the mechanical view of the world as worked out by modern science, applies the mechanical method to all depts. of phenomena, and attempts to apply the method to the question of the genesis of the world and its order. Metaphysical teleology also describes von Hartmann's system: to him the world is a

manifestation in time of an ontological principle, styled the unconscious, which is at once will and intelligence. Finally, we may notice the 'emergence' of world order—the 'emerged evolution' of Samuel Alexander, i.e. the emergence of totally new things from combinations of the old. In recent years the term C. has been applied to the mathematical concept of universal space-time developed by Einstein from the Newtonian system and further elaborated by de Sitter, Eddington, and Milne. A recent attempt to formulate a C. consistent with modern physics has been made by Hoyle, who has suggested that the universe does not alter with time in its general appearance. The disappearance of matter from sight owing to the expansion of the universe is compensated by the continuous creation of matter throughout the universe. However, some scientists now believe that it is impossible to make strictly scientific statements of any significance about either the beginning of time or the creation of the universe. See A. E. Taylor, *Elements of Metaphysics*, 1903; S. Alexander, *Space, Time, and Deity*, 1920; A. N. Whitehead, *Process and Reality: an Essay in Cosmology*, 1929; H. Macpherson, *Modern Cosmologies*, 1930; Sir A. Eddington, *The Expanding Universe*, 1933; E. A. Milne, *Relativity, Gravitation, and World Structure*, 1935; J. A. McWilliams, *Cosmology: a Text for Colleges*, 1939; Sir E. T. Whittaker, *The Beginning and End of the World* (Riddell Lectures), 1942, and *Space and Spirit* (Donnellan Lectures), 1946; B. Russell, *A History of Western Philosophy*, 1947; G. J. Whitrow, *The Structure of the Universe*, 1948; F. Hoyle, *Nature of the Universe*, 1950.

Cosmos, a genus of ann. and perennial herbs of tropical America, family Compositae, about 12 species; *C. bipinnatus* is the parent species of many garden forms.

Cosquin, Emmanuel (1841–1922), Fr. folklorist and lawyer, native of Vitry-le-François. C. is chiefly famous for his writings on folklore, which appeared in the journal *Romania* and were pub. in book form, *Contes populaires de Lorraine*.

Cossa, Pietro (1830–81), It. dramatist, b. Rome. He taught in a school at Leghorn, and wrote the plays *Mario, Sordello, Monaldeschi, Puschin*. His tragedy, *Nerone* (Eng. trans. by F. E. Trollope, 1870), was acted with success, and after this he continued to write classical and historical plays, such as *Cleopatra, Messalina, Cecilia, Paulo e il suo Secolo*. C.'s own favourite comedy; other works: *Teatro Poetico* (in 7 vols.), and a vol. of lyrics. See life by Trevisani; and Arcari, *Di P. Cossa e del Dramma in Italia*.

Cossacks (Russian *kazaki*, Ukrainian *kozaky*), distinct section of the Russian pop. in the S. of European Russia, S. Siberia, and the Far East. The word C. is of Turkish origin and means 'free warriors'. In the 15th cent. the Crimean Khanate and the Russian principality of Ryazan' had C. as irregular frontier troops. In the 16th cent. large and

active C. communities grew up along the banks of the middle and lower Dnieper and of the Don and its tribs.; they were formed by people, mostly peasants, who had fled from Poland-Lithuania and Muscovy respectively, driven by the religious and national oppression of the Orthodox Russian (Ukrainian) pop. in Poland, by political tyranny and the burden of taxation in Muscovy, and by the development of serfdom in both cases. For the further hist. of the Dnieper C. see SICH; UKRAINE. Still in the 16th cent., some Don C. settled on the riva. Ural and Terek, forming autonomous communities. The life in C. regions was not unlike that of the Amer. 'Wild West.'

The C. occupations, apart from military raids, were hunting and fishing, and from the 17th cent. agriculture. Their internal organisation was based on principles of direct democracy with elected *atamans* (see HETMAN). The relations between C. and the Russian Gov. were for a long time unsettled, ranking from direct service, as in the conquest of Siberia (see SIBERIA), to uneasy alliance *vis-à-vis* Turkey, and to open rebellion and invasion of Central Russia (see PUGACHËV; RAZIN; TROUBLES, TIME OF). In the 18th and 19th cents. the C. were gradually subordinated to the central authorities, retaining self-gov. locally, and were transformed into a prosperous, exclusive, hereditary estate of the realm. New C. communities were created by the Gov. (Astrakhan', Orenburg, Siberia, Transbaikalia, Kuban', Amur, Semirech'ye, Ussuri); some non-Russians (Kalmyks and Bashkirs) were also made C. All C. had to serve in C. military units which distinguished themselves in many wars. In the late 19th and early 20th cents. they were also used for police purposes. After the Feb. revolution in 1917 all C. communities transformed themselves into small reps. with elected *atamans*, and the All-Russian C. Union headed by the Don *ataman* Kaledin was set up. In Oct. 1917 the South-Eastern League (q.v.) was formed under C. leadership in S. Russia 'as a part of future Federal Russia.' The seizure of power by the Bolsheviks was met with hostility by most C., and they took a prominent part in the civil war (see CIVIL WAR, RUSSIAN). In some C. regions (e.g. Kuban') guerilla warfare continued till 1924. The Soviet Gov. abolished in 1920 all C. institutions and restricted C. service in the Red Army. The Collectivisation of Agriculture (q.v.) provoked a new wave of mass armed resistance among C., particularly strong in the Kuban' region in 1932–3. In 1936 the C. were officially 'forgiven' and some cavalry units were renamed C., though they were to be staffed by recruits from the Don and the N. Caucasus irrespective of their origin (mountain people were not recruited). During the Second World War C. units fought both in the Soviet and in the Ger. army; those of the latter who had taken part in the It. campaign were in 1945 compulsorily repatriated by the Brit. The C. self-awareness, military traditions, peculiarities of dress (adopted

from the Canaanian natives), and customs (horsemanship) have survived all vicissitudes of the last four decades.

Cossimbazar, see KASIMBAZAR.

Cossus, genus of lepidopterous insects, is typical of the family Cossidae, the goat-moths or carpenter-worms. The larva is a wood-borer, and the pupa is enclosed in a cocoon. *C. ligniperda* is one of the largest of Brit. moths, measuring from 3 to 4 in. from tip to tip of the expanded wings. The insect resides in and feeds upon the wood of the oak, poplar, aspen, and willow, and the caterpillar emits a very disagreeable odour.

Cost Accounting is the term applied to that system of accounting by which the cost of production or service rendered at any particular stage in the manuf. or part-manuf. of any commodity is ascertained. It differs from the ordinary system of accounting in that the latter simply gives the results of the business or section of the business as a whole, without attempting to dissect the cost of manuf. or service rendered at any particular period in the course of manuf. The two systems are, however, usually worked concurrently by independent staffs, although to bring out the best of both systems some sort of liaison is necessary. The value of the C. A. system is that the costs are put on record, and consequently are always handy for reference for comparative purposes. It provides a safe check against wastage, either in material or time, and is a sure means of discovering that section of a business which is not pulling its weight. It would, of course, be impossible to formulate any system of C. A. that would be applicable to all businesses. Indeed it would be safe to assert that each large business, apart from fundamentals, has its own system, that system which has been found from experience to be best adapted to its own particular requirements. The cost of a product or job would be obtained from the following details: (1) the prime cost, which would embrace cost of raw materials and wages; (2) shop expenditure, which would embrace foremen's wages, power, plant, maintenance, etc.; (3) overhead charges, which would embrace cost of distribution and administrative charges. The Institute of Cost and Works Accountants issue a diploma to successful candidates in their examination scheme, classes for which are held at most of the evening educational establishments. See also BOOK-KEEPING.

Cost-book System, system of partnership which obtains in various Cornish and Devonian mines. The system consists in a particular method of keeping the accounts and so managing the affairs of the partnership that the exact financial state of the concern can be readily ascertained. The Stannaries Act provides that the cost-book, which contains an abstract of the working expenses and returns on sales, must be made up and laid before the shareholders once in every 16 weeks. The process of formation of a cost-book company is begun by obtaining a licence to search for minerals; if ore is

found a lease is granted for a term of years, and then a meeting of the co-adventurers is called to decide on the constitution of the company. Cost-book companies may be registered under the Companies Act, 1908. A member of a cost-book company is at liberty to transfer his shares without obtaining the consent of the other members, and he may also insist on the company taking back his shares and paying him for them. A cost-book company, or rather partnership, is not dissolved by a member merely obtaining an account against the other members or transferring his shares, or by the death or bankruptcy of any member. The interest of a deceased member devolves as personality on his next of kin. Members or shareholders cannot, like ordinary partners, bind fellow members by any contract other than one for necessities required for the working of the mine in accordance with the custom of the locality. Cost-book mines are commonly managed by an agent of the shareholders, but such agent cannot make the members liable on a bill of exchange.

Cost of Living. Although the C. of L. must be of prime importance to the majority of the pops. of the different countries of the world, over normal periods the variation up and down is so gradual that it is only noticed by statisticians and economists. But the advent of the two world wars brought such a sudden rise in the price of commodities necessary to civilised life that the C. of L. became a matter of the most urgent concern to millions. From the time of the First World War to the present, wages have been fixed for very large sections of the community on a C. of L. basis determined formerly by the C. of L. Index Number, and since 1947 by the Retail Prices Index Number issued by the Ministry of Labour.

The newer Retail Prices Index Number is, however, based on a wider concept than the old C. of L. Index Number. It measures all commodities and services entering into the expenditure of the average family; and after the Second World War working-class standards rose to the point at which much of its spending was on semi-luxuries and services and not merely on food, rent, and other necessities. In these circumstances the C. of L. has lost its original meaning of the cost of the goods necessary to maintain minimum standards, and might in time be replaced by 'the cost of living well' (or at least much better than in the past). The index number compares the level of prices or the purchasing power in two different periods. It represents the average level of retail prices of commodities purchased by nine households out of ten in 1953-4 compared with retail prices in June 1947; it also measures the retail prices of each category of goods compared with their prices in Jan. 1956. The commodities include food, rent, clothing, fuel and light, transport, entertainment, services, and other items making up the budget of the average household. The index number of the

'base' month is taken as 100 and rises or falls are registered against this figure. Retail prices rose by about 50 per cent between 1947 and 1957. Although the rise was irregular, and for short periods there was relative stability, this period may be described as one of serious inflation. The drawback of the Index Numbers of Retail Prices is that they are based on the same 'basket' of goods and cannot therefore allow for changes in taste, purchasing habits, and quality, or in the choice available to the consumer. They must therefore be revised periodically (the last revision was in 1956, when new index numbers, based on the expenditure pattern of households in 1953-4, replaced those based on working-class budgets in 1937-8), and comparisons over long periods are consequently difficult. See STANDARD OF LIVING; PRICE.

Costa, Claudio-Manoel da (1720-90), Brazilian poet, native of Mariana, Minas Gerais. His 2 vols. of poetry, some written in Portuguese and Italian, gained for him a reputation. The poem *Villa Rica* is noted for its historical matter. He was (rightly) suspected of authorship of the *Cartas chilenas*, highly satirical of the Governor; his intimacy with Ribeiro caused him to be implicated in the political agitation of 1789, and he was imprisoned at Villa Rica, where he d., as is supposed, by poison. See S. Romero and J. Ribeiro, *Compêndio de História da Literatura Brasileira*, 1909.

Costa, Isaac da (1798-1860), Dutch poet and theologian of Jewish descent, was educ. at Amsterdam and Leyden. His first great poem, *De Verlossing van Nederland*, appeared in 1814, and 7 years later a collection of romantic poems, *Poëzy*, placed him in the front rank of national writers. In 1822 he became a Christian, and was thenceforward an ardent supporter of his adopted faith, writing many theological as well as poetical works. He also trans. the *Persians* and *Prometheus* of Aeschylus, and ed. the poems of Bilderdijk, his literary foster-father.

Costa, Lorenzo (1460-1535), It. painter, native of Ferrara. He probably studied under Cosimo Tura and Francesco Cossa. His celebrated picture, 'Madonna and Child,' and some frescoes, are in the Bentivoglio chapel in the San Giacomo Maggiore. His pupil, Francia (q.v.), was much influenced by him, and both worked in the chapel of St Cecilia. He went to Mantua in 1509, and was patronised by Francesco Gonzaga. Most of his best paintings are at Bologna: the 'Madonna and Child enthroned' hangs in the National Gallery. See J. Crowe and G. Cavalaselle, *History of Painting in Italy*.

Costa, Sir Michael (1808-84), conductor and composer, b. Naples. He came to England, conducted Zingarelli's *Cantata sacra* in Birmingham, 1829, and settled in London in the next year, when he produced the ballet *Kenilworth*. C. conducted at Covent Garden and at the Philharmonic concerts, as well as at musical festivals in the provs. His

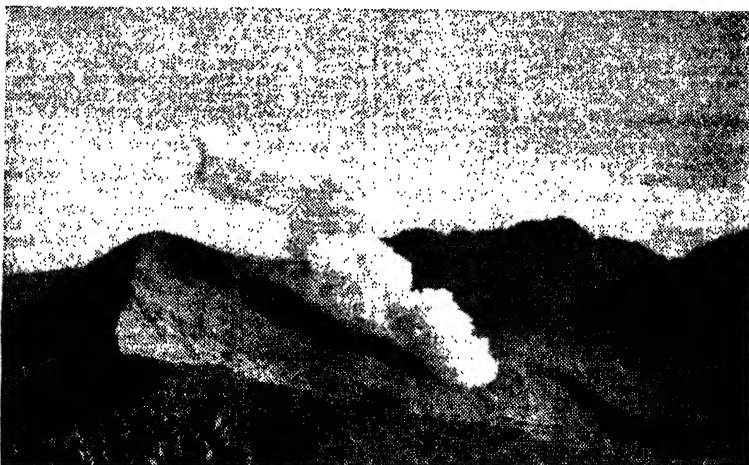
compositions are now forgotten. The most considerable were two oratorios written for the Birmingham musical festival, *Eli*, 1855, and *Naaman*, 1864.

Costa Rica, the most S. state of central America, bounded on the N. by Nicaragua, on the E. by the Caribbean Sea, by Panama on the SE. and S., and by the Pacific Ocean on the W. Lies between 8° and 11° 15' N. lat. and from 82° 30' to 86° W. long. Its area is estimated at 19,650 sq. m., and it is divided into 7 provs.: San José, Alajuela, Heredia, Cartago, Guanacaste, Puntarenas, and Limón. The Atlantic coast, with the exception of Port Limón, has few indentations, but along the Pacific there are the 2 large gulfs of Nicoya and Dulce. Across the country SE. to NW. extends the Sierra Talamancá, a continuation of the Cordillera of Chiriquí. Some of the peaks attain a great altitude, the highest being over 12,700 ft. There are a number of volcanoes, extinct or dormant, including Orosi (5056 ft), Poás (8930 ft), Barba (9567 ft), Irazú (11,260 ft), and Turrialba (10,974 ft). The rivs. are not useful for navigation, the chief being the San Juan, Reventazón, and Tárcoles. The San Juan partly separates C. R. from Nicaragua. The country is rich in minerals. Gold, silver, copper, zinc, nickel, lead, coal, mercury, and iron are found. The chief industry, however, is agriculture, the soil being fertile and the climate mild and temperate. The region of concentrated settlement in the highland forms the nucleus around which the C. Rican state is organised. It is a region of expanding pioneer settlements, of people vigorously at work transforming empty country into a country of farms and permanent homes. Superb coffee is cultivated to a very large extent, and on the success of the crops depends largely the revenue of the country. Coffee forms 50 per cent of the total exports, and in 1944 it was estimated at 22,400 metric tons, which is about average, but the 1955 record of over 33,000 tons brought in U.S. \$35 million. Bananas rank second in importance, forming about one-third of the total export trade, but they have only recently returned to the 12-million-bunch standard owing to the havoc caused by the 'Panama disease.' The new plantations are mainly on the Pacific coast. Vanilla and sarsaparilla are grown; sugar is still exported, but not in such great quantities; while cacao is rapidly increasing in importance. There is considerable trade in timber and cattle. International trade in 1954 was valued at \$28,750,000 (imports) and \$29,000,000 (exports). In the wooded dists. are found mahogany, india-rubber, ebony, Brazil-wood, cedar, and oak. There are thousands of sq. m. of public lands in C. R. that have never been cleared, on which can be found quantities of virgin rosewood, cedar, mahogany, and other cabinet woods. The Second World War temporarily stimulated the collection of wild rubber, the estab. of plantation rubber on 3000 ac., and the planting of abacá or hemp. The chief imports are cotton goods, rice,

chemical products, tanned leather, fats, industrial machinery, mineral oil, railway materials, and paints.

C. R. was discovered by Columbus in 1493, and, after much trouble with the Indians, effective colonisation began in about 1530. Its political life, like that of many of its neighbouring states, has been unsettled. It formed a part of the captain-generalcy of Guatemala until 1821, when for 2 years it was connected with Mexico. From 1824 to 1839 it formed part of the federal rep. of the states of central America. It was not till 1848 that C. R. was fully estab. as a rep. C. R. has been involved in sev. boundary disputes, the first of these, with Nicaragua, being settled by the president of the U.S.A. in 1888; and with Colombia, in 1921. The dispute with Panama was also

of the Communists, but the gov. controlled congress declared the election void and refused to give Ulate his credentials as president-elect. In the ensuing civil war the gov. was overthrown and a junta set up to govern pending the adoption of a new constitution. Towards the end of the year 1948 elections were held for a constituent assembly and Ulate's National Union party won three-fourths of the seats. Colonel Jose Figueres, as provisional president, and later as president, has governed the country since the suppression of the civil war in May 1948. The C. Rican Army was abolished on 1 Dec. 1948 on the eve of C. R.'s ratification of the Inter-Amer. Treaty of Reciprocal Assistance drawn up at Rio de Janeiro, but Figueres immediately ordered a general mobilisation when C. R. was



E.N.A.

COSTA RICA: THE VOLCANO OF IRAZÚ

settled in 1921, after Panama had entered and held the ter. to which it laid claim, but diplomatic relations were not resumed until 1928. Internally C. R. has had a much more pacific hist. than most of the central Amer. states during recent years. In 1917, however, Gen. Frederico Granados ousted Alfredo González from the presidency and himself assumed office. President Wilson of the U.S.A. persistently refused to recognise his claims, and when C. R. followed the action of the states by breaking with Germany in May 1918, he totally ignored the gov. as then formed. His opposition extended even to excluding representatives of C. R. from the League of Nations, but the State later became a member of the League. In the presidential elections of Feb. 1948, the National Union leader, Otilio Ulate, decisively defeated Calderón, candidate

invaded from Nicaragua by forces led by supporters of the exiled former president, Rafael Guardia, seeking to overthrow the military junta of Figueres. The invaders seized the tn of La Cruz, 5 m. inside the border, and pushed inland to Liberia. C. R. and Nicaragua signed a pact of friendship in Washington on 21 Feb. 1949, both countries having agreed to a peaceful settlement of their dispute. C. R., like Colombia, has been able to make use of its contrasted regions as a source of strength; it is one of the few countries in Lat. America which have been able to develop a strongly coherent national life. To a smaller degree than in most other countries has the political and economic power been concentrated in the hands of a very few, and for this reason C. R. is an example of an effective democracy, affording a notable example

of what can be done in road construction, building and operating schools, and organising other public services under the monotonous weather conditions of a tropical land. The president serves for a term of 4 years, aided by the 9 secretaries of state whom he appoints. The Constitutional Congress is the legislative body, of 44 deputies elected for 4 years, one-half of whom retire at the end of every 2 years.

Much Eng. capital is invested in the rep. Education is compulsory and the 844 elementary schools and 14 secondary schools are free. The univ. at San José was estab. in 1843, and has 10 faculties, with 200 profs. and lecturers. There are secondary schools for boys and girls at San José, a normal school at Heredia, and colleges at Alajuela and Cartago. C. R. can boast one of the lowest percentages of illiteracy in Lat. America. Spanish is the language of the country. The national religion is Rom. Catholicism, but toleration is granted to all sects. The cap. is San José. The other important towns are Cartago, Limón, Heredia, Alajuela, Puntarenas, and Liberia. The total pop. of C. R. is 900,000. See L. Fernández, *Historia de Costa Rica, 1502-1821* (Madrid), 1889; M. de Périgny, *La République de Costa Rica* (Paris), 1918; L. F. Guardia, *Historia de Costa Rica* (San José), 1939; P. E. James, *Latin America* (New York), 1941; and J. and M. Blesauz, *Costa Rican Life*, 1944.

Costanzo, Angelo di (1507-91), It. historian and poet, b. Naples. His most important work was his *Historia del Regno di Napoli, 1250-1489, 1581-2*, which was written in clear style, and which occupied him for over 30 years.

Costello, John Aloysius (1891-), Irish lawyer and statesman. He was called to the Bar in 1914, was attorney-general 1926-32, and helped to draft the Statute of Westminster (q.v.). A member of the Fine Gael party (q.v.), he was Taoiseach (prime minister) of the Rep. of Ireland 1948-51 and 1954-7.

Costello, Louisa Stuart (1799-1870), authoress and miniature painter, b. Co. Mayo. She wrote poetry, but is chiefly known for her works on travel, memoirs, and romances. Her prin. books are *Songs of a Stranger*, 1825; *Specimens of the Early Poetry of France*, 1835; *A Pilgrimage to Auvergne*, 1842; *Catherine de' Medici*, 1848; *Memoirs of Anne of Brittany*, 1855; *Bearn and the Pyrenees*, 1884; *The Rose Garden of Persia*, 1887.

Costello Giubileo, see FIDENAE.

Coster, Laurens Janszoon, supposed at one time to have been the inventor of movable types and therefore the precursor of printing, was b. Haarlem, where it is known he was living 1436-83. Junius in his *Batavia*, written in 1568, states C.'s claim. Twenty years before Gutenberg he had the idea of carving out characters from cubes of wood; these he put together to form inscriptions to accompany engravings. Later on he used metal instead of wood. A dishonest workman, having stolen some of C.'s apparatus, took it to Mainz, where he set up a printing business, taking Gutenberg as partner.

The problem as to who really was the inventor of printing has never been solved. The rival claims of Gutenberg and of C. are set forth by A. van der Linde in *The Haarlem Legend of the Invention of Printing by Coster* (trans. 1871); Hessel in his *Haarlem, the Birthplace of Printing*, 1887; by Wyss in *Zentralblatt für Bibliothekswesen*, 1888; and by A. Ruppel, *Gutenberg*, 2nd ed. 1947.

Costigliole D'Asti, lt. tn. in Piedmont (q.v.), 8 m. S. of Asti (q.v.). It has an imposing castle, and produces a well-known wine. Pop. 9000.

Costroma, see KOSTROMA.

Costs. This word in legal matters generally means the fees of a solicitor for his professional services. For certain types of work (e.g. conveyancing) a solicitor, in the absence of any express agreement to the contrary, may charge his client only such fees as are prescribed by the Lord Chancellor under the Solicitors' Remuneration Act. In litigation C. usually refer to the amount of money which the court orders the loser of an action to pay his opponent for the legal fees and expenses which he has incurred in the proceedings. The award of C. is at the discretion of the court, but in practice the loser is ordered to pay. A successful plaintiff may not, however, be awarded his C. if he is given only contemptuous damages (q.v.). The court may, in certain circumstances, order each party to pay its own C. If an action in the high court ought properly to have been brought in the county court (q.v.), by reason of the amount recovered or the value of the subject matter involved, the successful party will be awarded C. on the county court scale, unless the judge is satisfied that there was sufficient reason for bringing the action in the high court. In actions tried by judge and jury the successful party is awarded C. unless the judge 'shall for good cause otherwise order' (e.g. if he considers that the action was frivolous or vexatious). There is no appeal from a judge's order as to C. except where the successful party is deprived of his C. for 'good cause,' it being for the court of appeal to decide whether such 'good cause' existed. The successful party prepares a bill of C. and the amount properly payable by his opponent is assessed or 'taxed' by a court official called a 'taxing master.' Any items in the bill which are disallowed are said to be 'taxed off.' The net amount allowed by the master is called taxed C. C. are usually awarded on a 'party and party' basis, i.e. only those items are included which are really indispensable for the adequate conduct of the action. The cost of all the work done by the solicitor is not allowed, so that his client, although successful in his action, usually has to pay the balance not recoverable on taxation. Sometimes a successful party may be awarded C. on the more liberal 'solicitor and client' basis; this does not, however, mean that the loser is required to pay any amount which his opponent's solicitor wishes to charge, but only that amount which the master considers

reasonable in the circumstances. In actions concerning the interpretation of wills or the administration of trusts, the court usually orders that the taxed (i. of all parties be paid out of the estate (i.e. the trust fund).

Costume, see DRESS.

Costume Design, Theatrical. In the early Gk drama the actors performed their parts in various masks of three readily discernible types—the comic, tragic, and satiric. The wide mouth of the mask served as a megaphone, carrying the voice to the full extent of the theatre, and the set mask showed the wearer's characteristics in a building perhaps too vast for the detection of facial expression. The tragic actor was further distinguished by his long coloured and embroidered robe (the *chiton*), with sleeves and high belt, his tall headdress (*onkos*), his cloak (*chlamys*), and his buskins (*colturni*) or high thick-soled boots, which made his height impressive, and were graded in thickness according to the importance of the wearer. The comic actor was contrasted by his low shoe (*soccus*), his lack of headdress, abbreviated or absent *chiton*, his usually

in a brown mask, with hooked nose and white beard, was attired in red, with a black cloak and soft noiseless slippers. The anct Pulcinella, the forerunner of Punch, was always clothed in white; his back was humped and his stomach padded, his mask bore a crooked nose, and his headdress was at times a skull-cap, at others a cone-shaped hat.

The early Eng. plays were all connected with religious subjects, and the most notable costumes were those worn by the devil, who was represented with the head of a beast and his body clothed in the skin of an animal. In the times of Shakespeare the prevailing costume of the day was usually worn, but concessions were made in the Rom. dramas, when the leading actors were adorned with breast-plates and plumed helmets. Dressing to suit the part is of comparatively recent date. In the middle 18th cent. Garrick played Macbeth in a contemporary suit of black silk, with silk stockings and a tie-wig; Spranger Barry (q.v.) played Othello in a full suit of gold-laced scarlet, cocked hat, knee-breeches, and silk stockings; and Mrs Yates, as Lady Macbeth, appeared in



TWO SCENES OF A GREEK KOMOS
From a vase painting

skin-fitting costume, and the padding in various parts of the figure to give him a ludicrous effect. In addition, the colours of the actors' clothing had a symbolic significance.

The Rom. dramatic costume was closely modelled on the Gk, coloured wigs replacing the headdress—white wigs for the aged, black for youths, and red for slaves. Kings wore crowns and were gorgeously apparelled, while beggars were clad in rags.

The It. comic play, or the *Commedia dell' Arte*, developed the still-familiar figures of Harlequin, Columbine, Pantaloon, and Punch. The original Harlequin wore a long jacket laced in front, with multi-coloured patches on his breeches, a bat and wallet hanging from his belt; his head was shaved and his cap adorned with a tuft of feathers or the tail of a hare, rabbit, or fox. Later the patches became blue, red, and green triangles symmetrically arranged, and they finally became diamond-shaped. Columbine, usually the wife or sweetheart of Harlequin, wore originally the long wide skirt and the apron of a peasant, but later took to the abbreviated skirt of the ballet so much more adapted to the dancer. Pantaloon,

enormous hooped petticoats and huge flourishes. It was not that these great actors of George II's and George III's day were oblivious of these solecisms. Benjamin West, who introduced modern costume into historical painting, tried to induce Garrick to reform stage costume on his lines; but Garrick was aware that the public had grown accustomed to actors in the dress of their own period irrespective of the cent. in which the story of the drama passed. He did, however, introduce modifications in costume. Audiences did not notice any incongruity, and when, in the previous cent., Pope and Addison satirised the theatrical costumes of their day, it was not on the score of anachronism, but because the hero overdressed, as by wearing a huge plume of feathers, or because the heroine distracted the attention of the audience by her complicated train. Provided the dress did not detract from the dignity of thought and sublimity of expression of the play, the critics were satisfied. The change came with John Kemble (q.v.), who is credited with being the first Eng. actor to make a close study of 'dressing a part on its merits.' Yet even Kemble was guilty of such gross anachronisms as playing

Macbeth in a bonnet of the Black Watch Regiment. It was not strict historical accuracy he aimed at so much as a combination of suitability and restraint. But later both he and Macready (q.v.) were strongly influenced by the researches of James Robinson Planché (q.v.), dramatist and student of costume, and it was to Planché that the Eng. stage owed the first real advance in the reform of costume design. Charles Kean, during his tenancy of the Princess's Theatre in Oxford Street (1850-9), did much to improve the dressing and staging of plays. Macready went further than all his predecessors, and is said to have been so impressed with the importance of 'becoming' his dress that after rehearsal he went to bed in it. This practice appears to have been followed by Sir Henry Irving (q.v.), who showed a taste and aptness in the art of costume design that proved the main factor in the present development of that art on the Eng. stage. In our day there have been spasmodic signs of a reaction, as exemplified in the paradox of Hamlet in a top-hat and frock coat; but such experimentation may be regarded as no more than a satire on the pageantry of Sir Herbert Beerbohm Tree's productions. Not seldom, too, the stage has been the medium of introducing new fashions, especially to women: Miss Violet Vanbrugh, for example, focused attention on the allure of the corselet and stock collar, and Miss Mary Moore, in *Mrs Goring's Necklace*, revived the popularity of the Alsatian bow, while to Kate Vaughan was due the vogue of the lace-frilled petticoat.

Before the Second World War the influence of the Russian stage had its effect on theatrical costume throughout Europe. Early in the 20th cent. Diaghilev (q.v.) introduced the Russian ballet to Paris, London, and Berlin, and the spectacular beauty of scenery and costume displayed originated in the brilliant imagination of the great artists Benois and Bakst (q.v.). The Bakst tradition is continued by many modern artists. See E. Aria, *Costume: Fanciful, Historical, and Theatrical*, 1906; M. Willson Disher, *Costumes and Pantomimes*, 1925; A. Nicoll, *Development of the Theatre*, 1927; P. L. Duchartre, *Italian Comedy* (trans. by R. T. Weaver), 1929; R. Fenop-Miller and J. Gregor, *Russian Theatre* (trans. by P. England), 1930; M. Fernald and E. Shenton, *Costume Design and Making*, 1937; and F. M. Kelly, *Shakespearian Costume for Stage and Screen*, 1938.

Costus, family Zingiberaceae, genus of tropical herbaceous plants with pinnately veined leaves and brightly coloured flowers in spikes, the enlarged lip of the flower being the conspicuous part. Owing to the spiral arrangement of the leaves on the stem the genus is popularly known as spiral flag. Sev. species are cultivated in England under glass, the most attractive species being *C. igneus*, with orange-red flowers, and *C. malortianus*, with gold and orange flowers.

Cosway, Richard (1742-1821), miniature painter, son of the master of Blundell's

School, Tiverton, where he received his education. His success in life is said to have been due to his clever portrait of Mrs Fitzherbert, which gained for him the interest of the Prince of Wales. He was elected R.A., 1771.

Coswig, Ger. tn in the dist. of Halle, on the Elbe, 35 m. NNE. of Halle (q.v.). It has lignite mines, and paper, chemical, and tyre manufs. Pop. 14,600.

Cotabato, or **Cottabato**, chief tn of a dist. of the same name in Mindanao, one of the Philippine Is. The dist. is mountainous, and the chief peak, Mt Apo, is a volcano. The tn is situated on the Moro Gulf, at the mouth of the N. arm of the Rio Grande de Mindanao or Pulangi R. Pop. 20,407.

Cotangent, see TRIGONOMETRY.

Côte d'Azur, see ALPES-MARITIMES.

Côte d'Or, dept of E. France, part of the old prov. of Burgundy. A chain of hills known as the Plateau de Langres runs through the centre of the dept; in the S. is the chain of the C. d'O. The NW. dist. of Châtillonais is densely wooded, and there the Seine takes its rise. Other rvs. are the Rhone and the Loire, and a canal, which connects the Saône with the Yonne, is 94 m. in length. The climate is equable and healthy, the plains and valleys are fertile, and there is rich pasture land. The prin. wealth of the prov. lies in its vineyards, and it is here that the celebrated Burgundy wines are produced. Other products are wheat, barley, potatoes, hops, and a little tobacco. Sheep and cattle rearing takes place in the W. dists. Iron and coal are mined, and there are chemical, metallurgical, and foodstuff industries. The prin. tns are Dijon (the cap.), Beaune, and Montbard (qq.v.). Area 3390 sq. m.; pop. 356,800.

Côte-Rôtie, see RHONE WINES.

Côteaux, small coastal tn of Sud dept, Haiti, W. Indies, 12 m. SSE. across the peninsula from Jérémie. Pop. 2000.

Cotelerius, Jean Baptiste (1627-86), eminent Fr. Hellenist, b. Nîmes. He held the office of prof. of Gk at the Royal College in Paris with great distinction. He pub. *Monumenta Ecclesiae Graecae* in 3 vols., 1677-86, and various other works.

Cotentin, Anne Hilarion de, see TOURVILLE, COMTE DE.

Cotentin, dist. of France which forms part of the dept of La Manche, on its N. coast being Cape La Hague. This portion of land was originally the diocese of Coutances. Its chief tn is now Cherbourg. The C. peninsula was the scene of hard-fought engagements in the battle of Normandy in July 1944, and, though fanatical groups continued to resist for a short time, all resistance in the N. C. came to an end by 1 July. On 28 July the Ger. escape route through Coutances was sealed with the capture of the city by the U.S. 4th Armoured Div., which, with the 6th Armoured Div., formed the spearhead of the 7th Corps. The enemy withdrawal, following the loss of Coutances, began to degenerate into a disorderly retreat. See further WESTERN FRONT in SECOND WORLD WAR, *Battle of Normandy*.

Cotes, Francis (1725-70), portrait painter, one of the founder members of the Royal Academy. He was a Londoner by birth, and became a pupil of George Knapp. He worked both in London and Bath. His portraits in crayons were unrivalled, and he was also a good painter in oils. His chief works are portraits of Mrs Child of Osterley Park, and of the beautiful daughter of Wilton, the sculptor, afterwards the wife of Sir Robert Chambers. His portraits have been engraved by Bartolozzi, Ittland, Green, MacArdell, and others.

Cotes, Roger (1682-1716), famous mathematician, b. Burbage, Leicester. He was educ. at St Paul's School, London, and at Trinity College, Cambridge, becoming a fellow of Trinity in 1705, and in the following year Plumian prof. of astronomy. In 1713 he completed his valuable preface to the second ed. of Newton's *Principia*. His death at the early age of 34 brought the tribute from Newton that 'had Cotes lived we might have known something.' His writings were published in 1722 under the title *Harmonia mensurarum*.

Côtes-du-Nord, maritime dept of the N.W. of France, formed from part of Brittany. Area 2787 sq. m. Off the steep rocky coast lie Bréhat and other small is. In form C. is an undulating plateau, with 3 ranges of hills in the S. portion. The climate is mild and equable. On the high lands the soil is poor, but along the coast, where seaweed and marl are used as a fertiliser, it is much richer. Wheat, oats, and buck-wheat are largely grown, also potatoes, mangels, apples, and plums. The culture of flax is an important industry, and the dept is famed for its breeding of horses. Slate, lime, and china-clay are found, and the flour mills, tanneries, iron-works, and ship-building yards form a source of employment to many of the natives. The chief imports are coal, wood, and salt, and the exports are horses, flax, and agric. products. The fishing industry is of great importance. C. is divided into the 4 arrons. of St Brieuc, Dinan, Guingamp, and Lannion. The cap. tn is St Brieuc. The dept contains many interesting churches dating from the 12th cent. Pop. 527,000.

Cotgrave, Randle (d. 1634), the author of the earliest Fr.-Eng. dictionary pub. in England. He was of a Cheshire family, but little is known of his early life. He was educ. at St John's College, Cambridge (1587), and afterwards became secretary to Wm Cecil, Lord Burghley. In 1611 he pub. his Fr.-Eng. dictionary, of which there was a second ed. in 1632. It was a remarkable book of its time, and is still of great value to the philologist.

Cöthen, see KÖTHEN.

Cotignac, Fr. vil., in the dept of Var. Near it is a pilgrimage church dedicated to Notre Dame de Grâce. Pop. 1300.

Cotillon. The Fr. dance of this name was a square dance, similar in form to dances used throughout the ages, even amongst primitive peoples. It was the forerunner of the quadrille, and became

known in Eng. society about 1770. Many figures of C.s were introduced into the quadrilles. Thus the true C. faded into the quadrilles and the lancers in England, though its popularity remained in France and Italy for some years. In mid-19th-cent. dance books, pub. in Boston and New York, descriptions of C.s then in vogue are given. During the second half of the 19th cent. the name C. was used for a ballroom entertainment and was 'little more than a name for a variety of games.' Dancers selected their partners in several ways—choosing the name of a flower, looking through a mirror, catching an orange, etc., whereupon they danced either the polka or the waltz, according to the fashion of the moment.

Cotin, Charles (1604-82), wealthy Fr. preacher and poet, and the counsellor and almoner of Louis XIV. He was versed in philosophy, theology, and the Heb., Syriac, and Gk languages. His *Œuvres Mêlées* was pub. in 1659 and his *Œuvres Galantes* in 1663. Boileau frequently mentions him in his satires, and Molière in his *Femmes Savantes* satirises him under the name of Trissotin.

Cotinga, bird of the family Cotingidae, commonly known as the Chatterer. It is found only in tropical America. The plumage of the male is especially magnificent at certain times of the year. The general colour of the female is plain grey or green. It feeds on fruit and insects.

Cotman, John Sell (1782-1842), eminent artist, b. Norwich, where he was educ. at the grammar school. Showing an aptitude for painting, he went to London about 1798 to study, and there made the acquaintance of a number of famous artists, including Turner. He returned to Norwich in 1807, and obtained a livelihood by giving lessons in drawing, while he also painted many landscapes and attempted portraiture. He was consistently unsuccessful, which partly accounts for his fits of deep melancholy, but with the help of his patron, Dawson Turner, finally gained a modest security as drawing-master at King's College, London, 1834. Like Crome, he gives lustre to the 'Norwich school,' and his earlier water-colours, including the famous 'Greta Bridge, Yorkshire,' are among the masterpieces of the art. He also produced some excellent oil-paintings. See L. Binyon, *John Crome and John Sell Cotman*, 1897; and S. D. Kitson, *The Life of John Sell Cotman*, 1937.

Cotman, Joseph John (1814-78), landscape painter, the second son of John Sell C. As an artist he had much original power, but his ill-health was an insurmountable bar to any success in life. He produced many drawings of merit.

Cotman, Miles Edmund (1810-58), landscape painter and the eldest son of John Sell C. He painted riv. and sea views, and etched a few plates, his work showing much taste and skill.

Cotoneaster, family Rosaceae, genus of deciduous and evergreen shrubs, of which *C. integerrima* is found in Wales. Most garden species come from China and the Himalaya, and outstanding kinds are

C. bullata, *C. franchetii*, *C. frigida*, *C. horizontalis*, *C. serotina*, *C. simonsii*, *C. wurdii*, and *C. x watereri*.

Cotonu, or **Kotonu**, tn and port of Dahomey, W. Africa, 17 m. WSW. of Porto Novo. A railway connects it with Sabé, and another with Porto Novo. It was ceded to France in 1868. See DAHOMEY.

Cotopaxi, volcano in the E. range of the Andes in Ecuador, S. America. The cone of the volcano is snow-clad. Estimated by Whymper to be 19,613 ft (the top is about 10,000 ft higher than the elevation of the valley), *C.* is the world's highest active volcano. There have been numerous eruptions, the most violent being probably that of 1768. The first ascent

tershire, and S. Warwickshire. The range of the *C. H.* is, roughly, divided into two portions by the valley of the Churn, and the scenery E. and W. of this valley differs to a great extent.

The *C. H.* were of considerable importance in anct times, as is shown by the old tracks on the high parts, and the early Brit. forts and Rom. camps. The dist. was of equal importance during the Middle Ages, when the woollen industry of the Flemings was at the height of its prosperity, and the splendid par. churches, imposing houses, and solidly built inns are evidences of the wealth of those bygone days. In the byways beyond the chief tns of the Cotswolds little vils., still old-world and unspoilt, with their houses of



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UPPER SLAUGHTER IN THE COTSWOLDS

was made by Wilhelm Reid and A. M. Escobar in 1872.

Cotrone, see CROTONE.

Cotswold Hills, range of oolitic limestone hills mainly in Gloucestershire, England. They extend over a length of about 50 m.; the highest peaks reach to a height of 1100 ft (Cleve Hill is 1134 ft), but the average height is between 500 and 600 ft. The Thames takes its rise in the E. slopes. Large flocks of sheep are bred in the dist. Most people associate the word Cotswold with the line of hills extending across Gloucestershire from Wotton-under-Edge to Aston-sub-Edge; it is about 40 m. long by 30 m. wide in some parts. The hills, however, really commence at Bath, spread northwards into Gloucestershire, and over the border of that co. into N. Oxfordshire, S. Worces-

ter, and a source of delight to artists and tourists.

Among the chief tns are Gloucester, Cheltenham, Stroud, Evesham, Cirencester, Chipping Norton, Stow-on-the-Wold, Tewkesbury, Malnesbury, Lechlade, Pershore, and Tetbury. Among the smaller tns and vils. may be mentioned Painswick, Minchinhampton—noted for its common—Chipping Sodbury, Charlton Kings (in the grounds of Ashley Manor are the biggest oaks in the country, and there are traces of a Rom. camp at Battle-down Knoll), Broadway, Burford, Chipping Campden—noted for its market hall—Upper Slaughter, Lower Slaughter (with a delightful stream which flows down the middle of the street between stone banks and grassy verges, and eventually joins the Windrush at Bourton-on-the-Water),

Amberley (with a beautiful common on which, at Rose Cottage, Mrs Craik wrote *John Halifax, Gentleman*), Sapperton, and Winchcombe. Other features include Bear Hill, near Woodchester; and Painswick Beacon (922 ft high), with a Brit. hill-top fort on the summit. *See also under* the names of the tns. *See* H. Branch, *Cotswold and Vale*, 1904; O. G. S. Cranford, *Long Barrows of the Cotswolds*, 1925; H. J. Massingham, *Cotswold Country*, 1938; J. A. Gibbs, *A Cotswold Village*, 1939; and F. Derrick, *Cotswold Stone*, 1948.

Cotta, *see* SURPLICE.

Cottabato, *see* COTABATO.

Cottarii, *see* BORDARIL.

Cottbus, *see* KOTBUS.

Cottet, Charles (1863-1925), Fr. painter, b. Le Puy. He was a pupil of Puvis de Chavannes, and of Roll. He made his name by his gloomy, sombre, and impressive scenes of life on the coast of Brittany. His 'Storm on the Meuse,' 1890, and 'A Burial in Brittany,' 1895, now in the Lille Gallery, are typical of his work.

Cottian Alps, that portion of the main chain of the Alps extending from the Graian Alps on the N. to the Maritime Alps on the S., lying on the borders of France and Italy, and forming a div. of the W. Alps, as distinct from the Dauphiné Alps to the W. The C. A. have more than 30 peaks exceeding 10,000 ft, of which the most important are Monte Viso (12,602 ft), Aiguille de Scolette (11,500 ft), Aiguille de Chambeyron (11,155 ft), Rognosia d'Etache (11,106 ft), Dents d'Ambin (11,096 ft), Rochebrune (10,906 ft), and Rognosia di Sestrières (10,758 ft). There are some 20 passes or cols, among which is the pass of the Mont Genève, between the Cottian and Graian Alps, connecting the valleys of the R.s Dora Riparia in Piedmont and Durance in the Hautes Alpes. This is one of the oldest of the Alpine passes, and is the lowest carriage road in the W. Alps, while it is believed by many authorities to be the roadway used by Hannibal when crossing into Italy. There is also the famous Mont Cenis pass between Susa and Modane, constructed by Napoleon, and once the most used of the roadways, while the railway tunnel of Mont Cenis, 7 m. long, passes under the Col de Fréjus about 15 m. away. Other passes are the Col de Longet, Col d'Agnello, Col de la Traversette, Col de Sestrières, and the Col des Echelles. Here also are the Waldenses, who took refuge in the valleys of the C. A. **Cottingham**, tn in the Hants (p. 100) (q.v.) urb. dist. of Yorkshire, England, 4 m. from Hull. Pop. 11,000.

Cottle, Joseph (1770-1853), bookseller and author. He set up in the publishing business in Bristol (1791), where, through Robert Lovell, he made the acquaintance of Southey and Coleridge, making offers to each of them of 30 guineas for their poems; and in addition 50 guineas for Southey's *Joan of Arc* and 1½ guineas to Coleridge for every 100 lines of poetry he might write. C. was chiefly responsible also for Coleridge's periodical *The Watch-*

man, and, after an introduction to Wordsworth, pub. the *Lyrical Ballads*, 1798. On retiring from business C. produced *Malvern Hills*, 1798, and sev. other vols. of his own verse. It was he who handed over to Coleridge De Quincey's donation of £300, and he had some extremely sanctimonious correspondence with the poet protesting against his indulgence in opium. His *Early Reflections*, 1837, 1847, contains an injudicious and unworthy exposure of Coleridge, and the book is condemned, moreover, for inaccuracy and confusion.

Cotton, Sir Arthur Thomas (1803-99), general and irrigation engineer, who in 1828 began his life-work on the irrigation of S. India. The scheme for the waters of the Krishna was his, though it was carried out by Maj.-Gen. Charles Orr. Before his efforts Tanjore and the adjoining dists. were threatened with ruin from lack of water; they afterwards became the richest part of Madras. C. founded a school of Indian hydraulic engineering, and much of his work was done in the teeth of opposition and discouragement.

Cotton, Charles (1630-87), poet and translator, b. Beresford Hall, Staffs. He is said to have been educ. at Cambridge. His father, himself a brilliant man, numbered among his friends Ben Jonson, Selden, Izaak Walton, and Donne, and possessed estates in Derbyshire which were lessened in value through law suits. The younger C. travelled on the Continent as a boy, and seems to have been continually embarrassed by money matters. His *Ode to Winter* was eulogised by Wordsworth and Lamb, but his most meritorious work is a trans. of Montaigne's essays, first pub. in 1685. His *Scarronides*, or the *First Book of Virgil Travestied*, was pub. anonymously in 1664, and was revised in later eds., becoming more gross on each occasion. He also wrote *The Compleat Gamester*, 1674; *Wonders of the Peake*, 1681; and contributed a treatise on fly-fishing to the 5th ed. of Walton's *Compleat Angler*, 1676. *See* C. J. Sem-bower, *The Life and the Poetry of Charles Cotton*, 1911, and G. G. P. Heywood, *Charles Cotton and his River*, 1928.

Cotton, George Edward Lynch (1813-66) Eng. educationist who became an assistant master at Rugby, co-operating heartily with Arnold. In 1852 he was appointed headmaster of Marlborough College, which he raised to a high position. In 1858 C. became bishop of Calcutta, his chief work being the estab. of schools for Brit. and Eurasian children. *See* A. G. Bradley, *History of Marlborough College*, 1923.

Cotton, John (1584-1652), nonconformist divine, b. Derby. He was a tutor at Cambridge, and was later appointed vicar of Boston, Lincolnshire. Cited to appear, for his Puritan views, before Laud at the high commission court, he fled, in 1633, to Boston, Massachusetts. Here he preached and helped to frame the civil laws for the colony of Massachusetts. He was reputed a profound scholar, and was the author of nearly 50 works, including a catechism, forms of prayer, and a defence of the interference of a civil authority in

religious matters, in a famous controversy with Roger Williams.

Cotton, Sir Robert Bruce (1571-1631), antiquary, *b.* in Hunts, and educ. at Westminster School, London, under Wm Camden, and at Jesus College, Cambridge. He then began his collection of historical MSS. and coins, and rapidly acquired a great reputation as an antiquarian. Elizabeth I referred to him a question of precedence between England and Spain, while similar requests were made by members of the gov. Under James I he rapidly gained royal favour, and received a baronetcy in 1611, while the king employed him on sev. antiquarian researches. In 1615 he was imprisoned on suspicion of being implicated in the murder of Sir Thomas Overbury, but was released after 8 months. He was first returned to Parliament in 1604, but after the accession of Charles I his influence was used in opposition to the Crown on constitutional grounds, and he strongly opposed the suggested debasement of the coinage. His written criticisms of royalty led to his being excluded from his library, 1629-31. Although C. wrote many pamphlets, his original work is not outstanding: it is for his collections of MSS. that he is remembered. His library, with its additions from C.'s descendants, was bequeathed to the nation in 1700, and in 1753 removed to the Brit. Museum.

Cotton, Sir Stapleton, see COMBERMERE.

Cotton, Cotton Fibre. India had an export trade in C. in the reign of Anasis, 569-525 BC, and the consumption of raw C. for the making of garments existed long before Herodotus. The C. plant is indigenous to nearly all tropical and semitropical countries. It is a wool-bearing shrub (*Gossypium*) and is largely distributed all over the torrid zone. No sooner does the C. plant arrive at maturity than its swollen capsules or pods burst with a natural force into three or five segments to display its fleecy product. It has been calculated that there are about 137 varieties of C. The main species in use, however, are *Gossypium barbadense*, *G. herbaceum*, *G. hirsutum*, and *G. arboreum* or *G. peruvianum*. These include, respectively, Sea Is. and Egyptian (the finest varieties of all C.); Amer. Upland C.; Indian, African, Chinese, and other Asiatic varieties; and the fourth species named comprises grades of C. grown in India, S. and Central America, and Asia, and is the most universally consumed. C. is classified according to grades and staple lengths. Grades comprise a range of characteristics such as colour, feel, presence of extraneous material, etc., which are less susceptible to accurate measurement than staple lengths, which largely determine the spinning capacity of the fibre. Many different types of C. exist, with distinct but overlapping ranges of staple. According to the United States Dept. of Agriculture, C. with a staple range between $\frac{1}{2}$ in. and $1\frac{1}{4}$ in. constituted 60 per cent of the world production between 1927 and 1928, and 1931 and 1932.

The increasing output of comparable staple ranges in places such as S. Brazil,

China, and the irrigated regions of India has materially raised the share of this group in the world total in recent years (before the Second World War). C. below $\frac{1}{2}$ in. staple predominates in the indigenous growths of China and India. The adoption of shorter-stapled and earlier-maturing varieties to reduce the incidence of boll weevil, and the general shift of C. growing towards the W. sub-humid zones, largely accounts for the preponderance of the staples below 1 in. in the output of the U.S.A. India is also endeavouring to grow finer C., on account of the restricted market for short-staple varieties of the coarser types. Under the microscope a C. fibre appears as a flattened twisted tube, thicker at the edges than in the centre, and being of equal diameter for about three-fourths of its length; after which it gradually tapers for the remainder of its length, at the same time becoming more cylindrical. This twist of the C. fibre on its axis is the prin. cause of the C. fibres being so admirably adapted for spinning. Unripe fibres and C. in a wild state do not possess these readily twisting qualities. Botanists show that a good staple contains from 300 to 800 twists in its length, the mean length varying from 1.7 in. as in Sea Is. to 0.9 in. as in the best Indian quality; in an ordinary variety the number of twists ranges to over 150. Strength depends upon the number of twists and fineness of diameter and upon the length of the fibre. The length of C. fibres grown in the U.S.A. varies from $\frac{1}{2}$ in. to $1\frac{1}{4}$ in.; Sea Is. fibres from $\frac{1}{2}$ in. to $2\frac{1}{4}$ in.; Egyptian from $\frac{1}{2}$ in. to $1\frac{1}{4}$ in.; Brazilian from $\frac{1}{2}$ in. to $1\frac{1}{4}$ in.; Indian from $\frac{1}{2}$ in. to $1\frac{1}{4}$ in.; Peruvian from $\frac{1}{2}$ in. to $1\frac{1}{4}$ in. The fibres vary in diameter as follows: Sea Is., $\frac{1}{16}$ in.; Egyptian, $\frac{1}{16}$ in.; Amer. (ordinary), $\frac{1}{16}$ in.; Indian (best quality), $\frac{1}{16}$ in.

Cotton Crop and Production Statistics.—The largest C. crop is produced in the U.S.A., and it remains the most marketable C. because it is the most adaptable to general domestic use. But besides the countries already mentioned, C. is grown on Russian ter. in Asia, and (under the auspices of the Brit. C.-growing Association) in Uganda, Nyasaland, W. Indies, W. Africa, and the Sudan. But the three greatest grades for general consumption are cultivated in the U.S.A., Egypt, and India. In round figures about 35,000,000 bales, averaged at 500 lb. each, are consumed, in all parts of the world, annually. In the decade before the Second World War the C. industry was subjected in certain countries to gov. measures designed either to expand or restrict acreage by means of loans and subsidies. The demand for C., together with the market position of alternative commodities, largely influenced the ann. acreage under C. Acreage planted to C. in the U.S.A. represents (1954) about 37 per cent of the world total, and modern mechanical methods in cultivation include the use of the flame-thrower weeder, the C. picker, and the four-row cultivator, thus reducing considerably the labour force necessary. It should be noted that the unit yield of

C. varies in different countries, and also in the same country, through weather and soil conditions; but the average yield per ac. of the chief producing countries for the five seasons ended 1953-4 is as follows, in lb. per ac.: Port., 492; Egypt, 448; Soviet Union, 393; Anglo-Egyptian Sudan, 305; U.S.A., 285; Brazil, 140; Argentine, 196; Uganda, 90; Pakistan, 178; and India, 82. The largest exporters of raw C. are the U.S.A., India, Egypt, Brazil, and Pakistan.

Manufacturing Processes: Ginning.—The preparation for each season's crop of raw C. begins in Jan. and goes on until Mar., this work consisting of clearing and breaking up the ground. Planting of seeds commences in April, ending at the latest about the middle of the month. The picking of the ripe C. starts in Aug. and is completed in Dec. or the middle of Jan. The new season's crop of Amer. C. begins to arrive in Lancashire about the

these before the C. can be used for spinning, or even for baling. The first C. gin was invented in 1793 by Eli Whitney (q.v.), an American, and its productive capacity completely revolutionised the C. industry. It may be briefly stated that of the sev. types of gins in use, the most universally adopted are the Macarthy (or roller) gin and the Eagle (or saw) gin. After leaving the ginning houses the C. is pressed by machinery into bales, varying in weight from 200 lb. as in the case of Peruvian C., to 500 lb. as in the case of Amer. C., and 730 lb. as in Egyptian C.

Mixing and Blending.—On arriving at the spinning mill the raw material begins to pass through a series of processes. Mixing is the first. The C. is taken from the bales in its closely packed and matted condition and piled in stacks. It is allowed to stand in storage compartments for sev. days to permit the fibres to expand to their natural condition, and also to take out any excessive moisture. The blending is done for economic reasons, as it has been learnt by experience that the required quality of yarn may be effected by mixing a higher grade of C. with a lower one. It is essential that there should be a proper blending of shades if the C. is meant for yarn that has not to be dyed; but the chief consideration is that of getting a mixture of grades of fairly even fibres, so as to obtain the necessary evenness and elasticity in the yarn. Some mills still do the mixing by hand, but the large mills mix C. by machinery. Bale-breakers are used for this purpose, and one machine will mix over 150,000 lb. of C. a week. When the bales of C. have been opened, and the raw material properly mixed and stored, the next process is that of scutching.

Scutching, Carding, Combing, and Drawing.—The scutcher is a machine consisting of beaters running at from 1000 to over 1500 r.p.m. The machine beats the rough dirt out of the C., and by an ingenious process of fans and rollers forms it into a continuous sheet, which is lapped. The laps, or rolls of C., formed at the scutcher are even in weight and thickness, but the fibres are mixed up, and it is the function of the carding engine to comb them. The machine turns the C. into a sliver or rope of gossamer fibres, delivering the sliver into a revolving cam. There are different types of carding engines in use, but the one most generally adopted is the revolving flat carding engine. The wire teeth of the cards are of varied counts or thinness or thickness, according to the class of C. most used at the mill; they vary from 300 to 650 points per sq. in. In mills devoted to the spinning of fine counts, C. is put through combers after having been through the carding engine. The object of carding is to clean the C. and prepare it in slivers for the drawing frames, which draw the fibres parallel and even out irregularities, and the flyer frames where the attenuated slivers are further evened out. The effect of combing is to remove the shorter fibres. Other processes follow, lessening the



COTTON PLANT

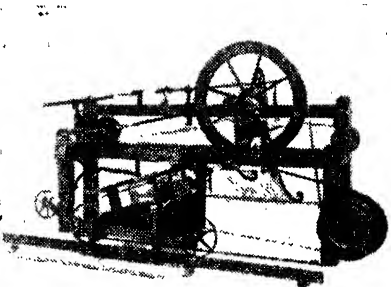
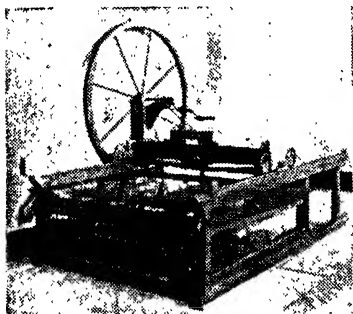
A, cotton; B, section of seed; C, seed; D, calyx.

middle of Sept. or the beginning of Oct. The chief markets for the sale of the world's C. are New York, New Orleans, Liverpool, Bombay, Havre, Bremen, Milan, and Amsterdam. It is sold on 'spot,' but principally in 'futures,' for delivery at some future date arranged by those who contract its sale, which is governed by the strict rules of the various C. exchanges. Every C.-producing country has a variety of grades or quality, the prices being arranged accordingly. Amer. C. of the base price is known by the term of middling, and Egyptian by good brown, there being grades below and above these qualities. The first process through which raw C. passes after being picked from the plants (by hand and sometimes by machinery) is that of ginning, which consists of separating the seeds from the raw material. This is usually performed by different types of gins operated in close proximity to the plantations. This is an important process, as C. before being picked is composed of two-thirds seeds, and it is absolutely essential to separate

thickness of the sliver made at the drawing frames from that of rope to a string or roving. But whereas it used to be normal to use three or four flyer frames before spinning, each frame reducing the thickness of the sliver, with improved methods of drafting one or two passages are sufficient to produce a roving ready for spinning.

Spinning—Mules and Spindles.—In all the processes previously mentioned, from the carding engine, the object has been to bring the thick sliver more and more to the fineness of the yarn to be spun on the spinning mule, and afterwards prepared for the loom where it is woven into fabric. Practically all the movements of the machinery are automatic, the workers simply being attendants upon the machines. The bobbins manufactured on the roving frames are conveyed to the spinning rooms, where they are fixed in long rows or creels forming part of the spinning mule. For higher quality yarns

stretch. The distance that the carriage travels from the rollers is called a draw, or a stretch, there being three or more performed each min. Each spindle winds on about 210 in. of yarn every min.; or a pair of mules of 2000 spindles, managed by one spinner and two piecers, make 420,000 in. of yarn every min. of the working day, or over 31,500,000 yds a week. The spindles vary in speed, as the motion of the carriage does, according to the counts being spun. Generally speaking, a mill of 80,000 spindles would yield about 62,000 lb. of yarn per week. Spinning is the most interesting and the most ingenious process in the treatment of C. Richard Arkwright is usually regarded as the founder of the C. factory system. He directed his attention to the matter of C. spinning machinery about 1767. He erected his first mill at Nottingham in 1769, and put up one at Cromford in Derbyshire in 1771. Perhaps the most



Crown Copyright. From Exhibits in the Science Museum, South Kensington
 REPLICAS OF (LEFT) HARGREAVES'S SPINNING JENNY, AND (RIGHT) CROMPTON'S MULE SPINNING FRAME

two bobbins of roving are used to make one thread of yarn. In the classical mule the double roving passes through three sets of rollers running at different speeds, in order to stretch it still further. Under the most modern practice, called high drafting, there is often a fourth line of rollers or one line is replaced by a revolving apron, and this enables good quality yarns to be spun from coarser roving. One spinner and two or three helpers look after a pair of mules. With the headstock or driving parts of the mule in the centre, a pair of mules consists of two long, moving carriages, carrying, on an average, about 1000 spindles each. The carriage of the mule is continually moving to and fro, a distance of about 60 in. out and 60 in. back again towards the rollers and the creels of bobbins. In its outward run it twists and stretches the yarn; for instance, on 60's twist, the length of yarn coming from the rollers is about 60 in., but the quantity wound up to the 'cop' or the spindles during the inward run of the carriages is 64 in. per

distinct departures from the old domestic spinning wheels were made by Arkwright and James Hargreaves, a poor weaver of Standhill, near Blackburn. Hargreaves invented the spinning jenny in 1764, in which spindles were fixed in a perpendicular position, or very slightly inclined. Arkwright patented the spinning or water frame in 1764, which, while drawing out the carding or roving, gave to it a twist and pressure necessary to produce the hardness and firmness which fitted it so admirably to the purposes of the warp; it was also capable of producing finer yarn than had been done prior to that time. It was this invention and the jenny of Hargreaves for multiplying the spindles in one machine that estab. the C. factory system. But the great waste of labour and time rendered a combination of the two machines eminently desirable; and it was in 1779 that Samuel Crompton, a weaver living at the Hall-in-th'-Wood, near Bolton, invented a machine which combined the essential principles of Arkwright's frame with the property of

stretching possessed by Hargreaves's jenny. The machine became known as the mule.

Warps for Weaving.—Warps for weaving are usually made up of hard twist, and weft yarn (containing little twist) is used in the shuttles and interlaced with warp, thus forming the cloth. Formerly the yarn was wound on the spindles by hand; but in 1825 Richard Roberts, a Manchester engineer, perfected a system of self-action in mules which gradually dispensed with the hand-mule, of which only museum pieces now exist. Improvements that have been added from time to time in the self-acting mule have made it into a very complex and highly productive machine. Although there is still a lot of mule spinning in this country it is steadily being replaced by spinning on ring-frames. In contrast to mule spinning, spinning on the ring-frame is performed on a machine that has no movable carriages. Unlike the mule, it spins the yarn on a continuous system, drawing the roving from a creel of bobbins. Also unlike the mule, it does not wind the yarn on a bare spindle, but on bobbins or paper tubes. From the rollers (which deliver the roving) the rove passes through thread-guides, placed over the centre of the spindle, and is wound upon the spindle by means of a ring and traveller. The rapid rotation of the spindle and traveller impart the necessary twist to the yarn. The ring is borne upon a movable rail, which moves upwards and downwards, thus providing the necessary traverse for the building of the cop of yarn. Hence the origin of its name. The ring-frame was originally used for coarse yarn, but as a result of steady development fine yarns are now spun satisfactorily on rings. Generally ring yarns are preferred where strength is important. Mule yarns still have advantages in the finest counts and where softness (as in hosiery yarns) is desired. Counts of any number can be spun on the mule, from 1's upwards of 350's. Ring yarns rarely go beyond 100's. The term count means the number of hanks of 840 yds of yarn in 1 lb. Hence 350's means 350 hanks of 840 yds each to the lb. Yarn as delivered by the spinning machine is unsuitable, both in form and condition, for immediate conversion into cloth. There are various methods of warping—that is, the making of the warp and attaching it to the loom. In fact, after C. yarn has been spun it has to undergo almost as many processes to prepare it for the loom as it had to go through in making it suitable for the mule. The yarn cops are sometimes first of all wound upon warping bobbins, there being various types of machines for this purpose. This is followed by warping, which consists in placing the thread together to form a warp so that it can be evenly wound upon the beam of the weaver's loom.

Sizing of the Yarn.—Next comes the sizing of the yarn; this is an important feature. It is necessary that all single-twist warp yarns should be sized. The object is to increase the strength and

smoothness of the yarn to enable it to bear the strain of weaving; sizing also increases the weight and bulk of the yarn and improves the appearance of the cloth. Among the substances used are flour and starch (from wheat, rice, sago, maize); dextrine and gum tiagazol are also used. For making the yarn soft and pliable mixings are applied containing tallow, grease, oils, wax, soap, and glycerine. For weight china-clay, barytes, and Fr. chalk are added. Zinc chloride is one of the substances put in to prevent mildew. Magnesium chloride, calcium chloride, glycerine, and common salt are used to help the cloth to retain the qualities given to it by sizing, which has now become of a far more scientific character than formerly. The main secret, however, of getting the right sizing is in the boiling. There are several makes of machinery for applying the size to the yarn, also for drying the yarn afterwards. The warps for weaving are made of single threads mostly, but sometimes of doubled yarn; for doubling there is special machinery. Usually the object is to give the threads a twist in the opposite direction to the twist of each single thread; this renders the doubled yarn stronger, smoother, and more elastic than a single thread would be that was equal in counts to the doubled thread. Special effects in cloth can be produced by doubling in the same direction as the spinning twist or by doubling with hard twist to produce crepe yarns. Doubled yarn is normally used in sewing C. and lace, and in making heavy fabrics like sail-cloth. Yarn is also sometimes gassed before being woven. It is run through gas-flames to take off all loose fibres adhering to the surface. Yarn is gassed principally for the manu. of sewing threads, lace and mercerised goods. Before weaving also, yarn that has to undergo bleaching or dyeing is reeled into hanks of a suitable size. Yarn for export purposes is also reeled into hanks of 840 yds of yarn each.

Weaving.—Weaving is an ancient art. Woven goods were used by the Egyptians over 6000 years ago. Woven cloth has been preserved as specimens of work of the lake dwellers of prehistoric times. The shuttle is mentioned in the Bible and other ancient books. The art of weaving consists of interlacing a continuous thread amidst a series of parallel threads. No doubt weaving was carried on in its primitive forms till the invention of the fly-shuttle by John Kay of Bury in 1733. Before this shuttle, with its apparatus for sending it to and fro across the lathe of the loom, it was the custom to have two weavers for each loom, one at each end to throw back the shuttle. With Kay's introduction one weaver could manage a loom, and double the quantity of cloth woven each day. Of course, the invention was adapted to the hand loom. The steam power loom was first constructed by Dr Cartwright, who was granted a patent in 1785. Kay had to fly from the country on account of the attitude of the workers towards inventions that displaced

labour. Cartwright's first looms were also destroyed by mobs of working men. Like spindles in spinning, looms have continued to increase in speed. Patent inventions form the basis of automatic weaving. Improvements have been added from time to time, including the drop-box motion, to operate the rising and falling of the shuttles according to their use for putting in different shades and colours to make up the patterns of the cloth. Various labour-saving introductions have made it comparatively easy for one weaver to manage from four to eight of the ordinary Lancashire looms, but until the invention of the modern automatic loom it was still necessary for the weaver to renew each weft cop as it ran out. In automatic weaving specially wound bobbins are used for the weft and the machine replaces each as it runs out from a battery, without stopping the loom. With assistants, a weaver can tend from 20 to 60 automatic looms, according to the width and complexity of the cloth.

Other processes.—Mercerising was invented in 1850 by John Mercer (*see* MERCERISED COTTON), a calico printer of N.E. Lancs. There are now many patent methods in use. The process of mercerisation is to give to C., yarn, and cloth the appearance of silk, to prevent shrinkage, and to give to the vegetable fibres a greater attraction for dyes. In many cases mercerised C. has displaced silk; indeed, it has such a lustre that it can be scarcely distinguished from silk. Mercerisation also increases the strength of yarn and cloth. Its action is to remove such resistance to dyes as arises from wax, oil, and other natural colouring substances always present in C. fibres. As a result of mercerisation the yarn has been noticed to have increased in strength to the extent of 50 per cent. The bleaching, dyeing, and finishing of C. have developed considerably of recent years. The bleaching is now carried out at all stages of manuf.—those of raw C., slubbings, rovings, cops, cheeses, hanks, and warps, and in the cloth pieces. By far the greater quantity, however, is bleached in a woven state. Dyeing also is now carried on at all stages of manuf. Of late years, the practice of dyeing yarns in forms other than in hanks has grown considerably. Details are given under DYE. There are sev. methods of bleaching, but the old chloride of lime bleach is still the most successful, both in regard to results and cost. Calico printing is now carried on extensively. In this process there are four distinct operations, as follows: preparation of the cloth for printing; application of the colouring matter; the fixing of the colouring matter; and the finishing. The printing rollers are engraved in various ways. Hand engraving is applied mainly to very fine work. The pentagraph method is used for bold designs, this being an etching process on a coating of varnish. Photo-etching is also applied for transferring the necessary design on to the copper rollers used in the printing machines. Fine designs are also im-

printed on the roller by a process of milling; in this case the copper roller is run over hardened steel rollers which contain a relieved impression of the required design. In recent years processes have been developed, and are now widely applied, which greatly reduce the tendency of cotton cloth to shrink and crease in wear and laundering. C. cloth can also be rendered waterproof and fire-resistant.

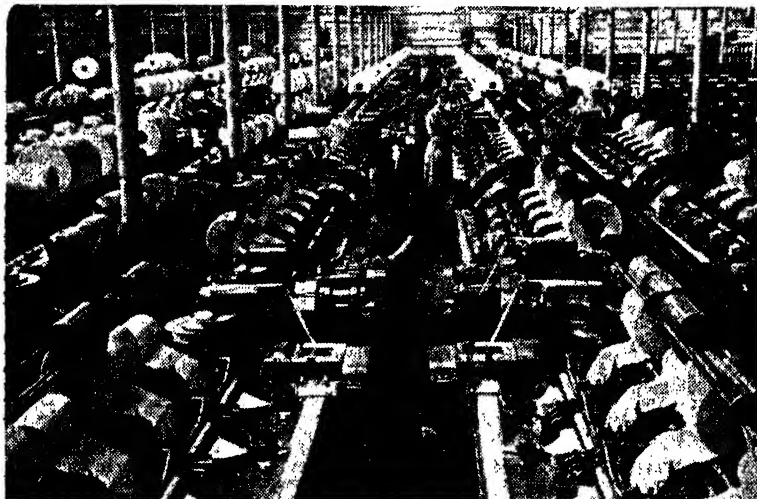
The British Cotton Industry.—This is carried on mostly within a radius of 30 or 40 m. of Manchester, where the humidity of the atmosphere is highly suitable for spinning and weaving. The area also has a good supply of coal and water. Spinning is done in S. Lancs, principally in the dists. of Manchester, Oldham, and Bolton. Oldham is the centre of the coarse-spinning area, and Bolton is the centre of the fine-spinning area. C. weaving is mostly confined to the N. and N.E. of Lancs, the prominent dists. being Blackburn, Preston, Burnley, Nelson, and Accrington. C. knitting and lace-making are carried on in Derby, Leicester, and Nottingham, and sewing thread is manuf. at Paisley in Scotland. Some few years before the Second World War the Brit. Gov. somewhat improved the Brit. colonial market for Lancs C. piece goods by a system of quantitative restriction of imports especially directed against Jap. imports into the Brit. colonies. In 1939 a Cotton Industry (Reorganisation) Bill was introduced by the president of the board of trade. Its chief aims were to reduce the excess capacity in the C. industry, the result of serious contraction suffered in the last 25 years, which overlay the markets, and to counteract weak selling by schemes of minimum price-fixing. The Cotton Industry Act, 1940, provided for setting up a board to perform specified services for the benefit of the C. industry. Among the services specified are advertising to stimulate exports, research and experiments relative to the manuf. or consumption of the products of the industry, and the collection and pub. of statistics. The Act, which was suspended at the outbreak of war and later repealed by the post-war Labour Gov., also provided for payments by C. spinners to meet the expenses of the board and to help the Empire C. Growing Corporation. In 1945 the Gov. appointed a working party to examine the organisation and operation of the C. industry, and as a result of their recommendations the C. board was reconstituted as a development council. It became tripartite, that is it included representatives not only of the employers and trade unions in all branches but also of outside interests. Its funds are now raised from all sections of the industry (not only spinners) and include the industry's ann. contribution to the cost of running the Brit. C. Industry Research Association at its research centre at Didsbury, Manchester. The Amer. C. industry is in a flourishing condition owing to the large domestic consumption of C. goods, the use

of automatic machinery, and the enterprise which discovers new uses for C. products. The quantities and value of U.K. exports of C. yarns and manufs. in 1938 and 1954 are shown in the table on pp. 54-55.

Government Controls. — During the Second World War no yarn could be spun in Britain without gov. approval given according to the intended final use of the product. Complete 'planning' of production began in 1942; its objects were to ensure that enough C. goods were produced for the forces (including, later, demobilisation clothing), for use by other industries, and for the civilian clothing ration. Exports were, in general, unimportant. After the war the aims of the C. industry were to earn foreign exchange,

and non-wool cloths sold over the counter in the piece.

The Raw Cotton Commission, appointed in 1943, was the (Labour) Gov.'s first experiment in state buying as a permanent policy. In 1952, after the Conservative Gov. took office, spinners were given an ann. choice of buying from the Commission or obtaining their own supplies. In the first year about 30 per cent was bought privately. In the second year the percentage rose to over 50 per cent and the Gov. decided to wind up the Commission. The Liverpool Futures Market was reopened in May 1954 and the Commission came to an end in Aug. 1954, a liquidator being appointed to dispose of the remaining stocks.



Cotton Board, Manchester

'COMBERS' IN A MODERN COTTON FACTORY

to enable the clothes ration to be increased, and supply war-devastated areas, especially in the Far East. Controls were progressively relaxed, but yarn order books and exports were limited by a licensing system until 1949, and price controls on yarn and cloth were retained until 1948. During this period exporting on commercial principles, the earning of useful foreign exchanges, and the rebuilding of Lancashire's trade connections received little attention; and it was not until the convertibility crisis of 1947 that the Gov. began to look to the C. industry for dollars. Clothes rationing ended in 1949, and the Utility Scheme was replaced by a system under which purchase tax is charged only on the excess over an arbitrarily fixed price, so that the cheaper goods escape tax. In 1955 the tax was removed entirely from household textiles

Cotton in the U.S.A. — The growing of C. and its manuf. have for many decades played a very large part in the economic life of the U.S.A. Although the farmers of the S. states vary their crops, C. is still by far the most important element in farming in the S. The total ann. value of the C. crop of the U.S.A. has averaged something like \$1,500,000,000. The leading C. states are Texas, with 6,100,000 ac. devoted to its growth and producing over 1,650,000 bales; Mississippi, over 2,280,000 ac. and 1,040,000 bales; Arkansas, 1,625,000 ac. and 1,240,000 bales; Alabama, 1,520,000 ac. and 800,000 bales; Georgia, 1,045,000 ac. and 555,000 bales (compared with a previous average of 956,000 bales); N. Carolina, 578,000 ac. and 420,000 bales; S. Carolina, 925,000 ac. and 695,000 bales; and Oklahoma, 520,000 ac. and 260,000 bales.

Type of Product	1938
Cotton yarns: grey and unbleached bleached and dyed	110,002,900 lb. 12,947,300 lb.
Cotton manufs.: woven piece goods: grey unbleached white bleached printed dyed in the piece manufactured wholly or in part of dyed yarn and commonly known as coloured cottons	446,678 cwt. 633,365 cwt. *306,281,000 sq. yds *368,777,000 sq. yds * 78,581,000 sq. yds

*No weights given.

QUANTITIES AND VALUES OF UNITED KINGDOM EXPORTS OF COTTON

In the early days of C. manuf., the raw material was grown in the S. and manuf. in the N., principally in the New England states which had almost a monopoly of the business. Since the First World War a veritable revolution has taken place in the industry. With water power, cheap coal, and cheap labour in the S., it suddenly occurred to business men that it was more economical to manuf. C. right in the section where it was mainly grown. The result is that to-day the S. has more spindles in operation than New England. Recent figures showed the S. with 15,000,000 spindles as against 9,000,000 in the New England states. N. Carolina had 5,740,000 spindles; S. Carolina, 5,586,000 spindles; Massachusetts, 4,204,000 spindles; Georgia, 3,140,000 spindles; and Rhode Is., 1,768,000 spindles. The average number of active spindles is about 25,000,000. *See also DYE.*

See G. Watt, The Wild and Cultivated Cotton Plants of the World. A Revision of the Genus Gossypium, 1907; G. W. Daniels, The Early English Cotton Industry, 1920; B. Bowker, Lancashire under the Hammer, 1928; A. P. Wadsworth and J. de L. Mann, The Cotton Trade and Industrial Lancashire, 1630-1780, 1931; H. B. Brown, Cotton, 1937; J. T. Marsh, Mercerising, 1941; H. Hargreaves, A List of Recorded Cotton Insects of the World, 1948; and The Cotton Year Book (ann.).

Cotton Printing, *see* CALICO PRINTING.

Cotton Weed, or *Oenothera maritima*, a very rare perennial of seashores and shingle in Cornwall and Jersey, and the Mediterranean; covered with long silky hairs. It belongs to the family Compositae.

Cotton Wool, name given to C. in its raw, woolly state as gathered from the bolls or capsules of plants of the genus *Gossypium* and family Malvaceae (*Gossypium herbaceum* or *album*, *G. barbadense* or *nigrum*, *G. arboreum*). It consists of the soft, downy fibres (1 to 2 in. long) surrounding the C.-seeds. These hairs or fibres are separated from the seeds and

freed from impurities, wax and fatty matters being removed by boiling in dilute caustic potash. Bleaching-powder and hydrochloric acid are used in preparing C. W. for use, and it is washed frequently. Prepared sheets or rolls of it are used like C. batting for stuffing and quilting. A soft, downy substance resembling fine wool, it is usually enclosed between glazed surfaces for such purposes, and sold by the yard. A specially prepared kind is used in surgery for dressing wounds, etc. It is absorbent, soft, and elastic, and is often steeped in disinfectants. *See COTTON.*

Cotton-worm, popular name of the larva of *Aletia xylinæ*, a species of Noctuidæ, or owlet-moths, closely allied to the army-worm. This caterpillar is to be found in both N. and S. America, where it ravages the cotton crops and leaves other plants alone. The destructive nature of this creature sometimes costs the U.S.A. sev. millions of dollars in one year.

Cottonseed, seed of various species of the genus *Gossypium*, grown in tropical, sub-tropical, and warm temperate climates primarily to produce cotton fibre; C. is thus essentially a by-product. Prin. varieties cultivated are, broadly speaking, *G. hirsutum* in the U.S.A., *G. nigrum* and *G. arboreum* in India, and *G. barbadense* in Egypt. The plant grows as a bush, to a height of 2 to 3 ft., and bears flowers of various colours ranging from a creamy hue to red, depending upon the variety. After pollination, the seed pods develop into 'bolls' which gradually ripen and finally burst, revealing the fine white cotton fibres enclosing the black seeds. These bolls are picked by hand or machine and passed through 'cotton-gin' machines for separation of staple fibre from seed, the fibre to be pressed into bales for transporting to spinning mills and the seeds either fed to cattle or delivered to crushing mills for extraction of the oil. Some seeds, in addition to producing staple cotton, produce a high percentage of short fibres or 'linters' and, as these are not all

1954	1938	1954
34,001,093 lb. 6,459,705 lb.	£ 8,395,379 1,279,532	£ 14,456,576 2,870,279
• 41,234,000 sq. yds • 137,076,000 sq. yds • 224,870,000 sq. yds • 191,601,000 sq. yds	3,841,434 7,776,104 7,735,803 10,628,215	4,913,566 14,573,516 26,980,766 29,096,060
• 42,691,000 sq. yds	2,563,717	6,383,589
Total value	42,220,184	99,274,352

YARNS AND MANUFACTURES FOR THE YEARS 1938 AND 1954

removed in the ginning process, the seeds are commercially known as 'White'; others produce no linters and the essentially naked ginned seed is known as 'Black'. White seed is 'delinted' at the crushing mill by machines similar in principle to the cotton saw-gins. C. is ovoid, about a quarter of an inch in length, and comprises 2 prin. parts: the hull or spermoderm, constituting about 40 per cent of the whole seed and from which the cotton fibres arise, and the kernel or embryo, from which oil and meal are obtained. Main cotton producing countries are: the U.S.A., the Soviet Union, India, China, Brazil, Egypt, Mexico, Pakistan, Turkey, and Argentina. The U.S.A. is by far the largest producer with yields of over 6 million tons per year, while yields in other countries vary from an estimated 2 million tons in the Soviet Union to about a quarter of a million tons in Argentina. In 1954 only about 2 per cent of world production of C. was exported, chiefly by the smaller producing countries; the Sudan was the major exporter with rather more than 100,000 tons out of a production of some 170,000 tons. The linters removed at the crushing mill are used as a stuffing material in upholstery, for the production of wadding and low-grade yarns and, when purified and bleached, in the preparation of paper and surgical dressings. Also, they contain from 72 to 85 per cent of cellulose, which is purified and used for the production of high-tensacity rayon for tyres, hosiery, etc., esters and ethers for plastics, and nitro-cellulose for explosives. See COTTONSEED OIL.

Cottonseed Oil, obtained from the seed of various species of the plant *Gossypium* by expression, using hydraulic presses or continuous screw presses (expellers), and, to a lesser extent, by extraction with a solvent (see OILSEEDS, PROCESSING OF). The black or delinted seed may be pressed as a whole, or the hull, which constitutes about 40 per cent of the seed and contains only 1-2 per cent of oil, may first be

removed and the kernel only, containing about 37 per cent of oil, pressed or solvent extracted to produce cake or meal of high protein content and oil of better quality and colour. Crude C. O. is dark in colour, has a strong characteristic flavour and odour, and is remarkable for the presence of an unusual amount of non-glyceride substances including a complex phenolic body known as gossypol, which is removed during alkali refining. The refined oil is liquid at room temp. but, due to the presence of high melting glycerides, it deposits a solid fat known as C. 'stearine' when cooled below 50° to 60° F. It is used as a frying oil, or is hydrogenated (hardened) to a desired plasticity for use in the manuf. of margarine and cooking fats, or is separated into two fractions by cooling or 'winterisation' to produce a liquid oil suitable for use in salad oils and mayonnaise and, to a small extent, for packing foods (sardines, etc.). Formerly, separation of the high melting glycerides was by simply allowing the oil to stand and settle out in outside tanks during the winter, hence 'winterisation'; but, due to the large demand for 'winter' oil, artificial cooling is now employed and the liquid oil is separated from the solid portion by filtration. Main fatty acid components of the whole oil are—saturated: Palmitic (20-24 per cent); unsaturated: Oleic (23-36 per cent) and Linoleic (42-54 per cent). The black soapstocks produced in the refining process are used for soap making and are also a source of raw material for fatty acids for use in the manuf. of alkyd resins, greases and lubricants. The 'undecorticated' and 'decorticated' C. cake and meal residues, produced from seed with and without hulls respectively, are valuable protein foods for cattle. Cottonseed hulls have so far only limited uses but it is thought that their potentialities have not been fully explored. They have little nutritional value and are included in meal only with the object of adjusting the protein content. Main constituents are: crude cellulose, pentosans, lignin and

tannins. The pentosans may be converted into furfural for use in the petroleum, lacquer, synthetic resin and other industries. Some hulls are used as boiler fuel. See COTTONSEED.

Cottrell, Ida Dorothy Otley (1902-), Australian novelist, *b.* Picton, New South Wales. Her maiden name was Wilkinson, and in 1922 she married Walter M. Cottrell and went to live in America. Her novels *The Singing Gold*, 1929, and *The Earth Battle*, 1933, were followed by 2 animal stories, *Warka*, 1936, the hero of which is a terrier, and *Wilderness Orphan*, 1940, about a kangaroo.

Cottrell-Lodge Method, method of precipitating dust and smoke particles by a high-tension electric discharge, discovered in 1883 by Sir Oliver Lodge, and developed on an industrial scale by Lodge and Cottrell. It is used to purify the fumes from cement and other furnaces, sulphuric acid works, smelting plants, factories, and so on. The apparatus consists of chambers containing electrodes maintained at high voltage, e.g. 75,000 v., and the dust particles are attracted to these electrodes. From time to time the deposited solid is shaken off by the action of an automatic hammer. The C. M. not only helps to purify the atmosphere of industrial dists., but enables valuable solid by-products in the fumes to be collected easily; thus the rare metal thallium is obtained from the flue dust of sulphuric acid works.

Cottus, the genus of spiny-finned fishes which includes the bull-heads and miller's thumbs, is typical of the family Cottidae. The species are to be found round the coasts and in fresh water of the N. temperate zone. *C. gobio* is the common bull-head (q.v.) of streams in Britain.

Coty, René (1882-), Fr. statesman, educ. at Caen Univ. He served in the First World War, and subsequently entered Parliament. After the Second World War he was a member of the National Assembly 1945-8, and an independent member of the Senate from 1948. In 1953 he was elected second president of the Fourth Republic in succession to Vincent Auriol (q.v.), being chosen in the thirteenth ballot.

Cotyledon: 1. Family Crassulaceae, as now classed a genus of 30 species, chiefly S. African, grown in cool greenhouses in gardens. *C. caldioides*, with fleshy stem and leaves, *C. paniculata*, and *C. reticulata* are summer flowering and succulent; *C. undulata* is a shrubby plant with attractive mealy leaves and cream flowers with red striping.

2. The first leaf or leaves of a plant, forming part of the embryo in the seed. C.s may stay in the testa below ground or be raised above ground on germination; and in some plants (e.g. legumes) contain food reserves for the embryo. The number of C.s is the basis of the two classes of flowering plants, Monocotyledons and Dicotyledons.

Cotylosaurs, primitive Upper Carboniferous and Triassic reptiles from which other reptiles are believed to have originated.

Cotys, or **Cotyto**, Thracian goddess, whose festival, the **Cotytdia**, was celebrated during the night and resembled that of Cybele. She was later worshipped at Corinth and Athens.

Coucal, or **Crotropus**, genus of bush-birds of the family Cuculidae; the species inhabit Asia, Africa, and Australia. They are strong-billed birds which feed on small animals, from insects to young birds, and in habit they are chiefly terrestrial. Unlike many of their allies the cuckoos they build their own nests. *C. sinensis*, the crow-pheasant, is an Asiatic species.

Couch, Sir Arthur Thomas Quiller-, see QUILLER-COUCH, SIR ARTHUR T.

Couch-grass, see AGROTYRON.

Couchant, term in heraldry, used to describe the position of a beast lying down with its head up. If its head rests on its paws it is dormant.

Coucy, Chastelain de, Fr. poet of the 12th cent., who took part in the Third Crusade (1189-91), being killed by the Saracens in 1203. His few songs were pub. by Fath as *Die Lieder des Castellans von Coucy*, 1883. He was the hero of *Le Roman du Châtelain de Coucy et de la Dame de Fayel*, a romance of the end of the 13th cent. Crapet's ed. appeared in 1829, a reprint in 1895. See G. Paris, *Romania*, viii, 1879.

Coucy, Sires de, Fr. medieval family. They were resolute opponents of the policy of royal aggrandisement pursued by Louis VI. One of them died at the siege of Acre (q.v.) in 1191, and another at Crécy (q.v.) in 1346. A member of the family, sent as a hostage to England, married Isabel, daughter of Edward III.

Coucy-Le-Château-Auffrique, Fr. vil. in the dept of Aisne, 10 m. from Soissons. There are the ruins of the splendid 13th-cent. castle of the Sires de Coucy (q.v.), and a 12th-16th-cent. church. Pop. 760.

Coué, Emile (1857-1926), apostle of auto-suggestion as a method of cure for disease, *b.* Troyes, France. He carried on business as a chemist at Troyes, 1882-1910, and was led, by an accidental occurrence in his business, to belief in the curative power of imagination and expectation. His fame was almost entirely due to his sincere simplicity and charity. He opened a free clinic at Nancy in 1910, and after the First World War lectured throughout France and in England and America—on his famous text 'Day by day and in every way I am growing better and better.'

Coueron, tn. of France, situated on the Loire, in the dept Loire-Inférieure. It has metal industries. Pop. 10,000.

Coues, Elliott (1842-99), Amer. ornithologist and biologist, *b.* Portsmouth, New Hampshire, U.S.A. He was prof. of anatomy at Washington and founded the Amer. Ornithologists' Union. His chief works are *Key to the North American Birds*, 1872; *A Field Ornithology*, 1874; *Birds of the North-west*, 1874; *Birds of the Colorado Valley*, 1878; *New England Bird Life*, 1881; and *Dictionary of North American Birds*, 1882. He also pub. a notable vol. on N. Amer. mammals,

Fur-bearing Animals, 1877, and sev. works on early travel in the W.

Cougar, or **Cougat**, see **PUMA**.

Cough, explosive expulsion of air from the respiratory passages produced by reflex action. The nerves of the mucous membrane lining the upper air passages are particularly sensitive to irritation caused by foreign substances or inflammation. The action of coughing consists of a deep inspiration, followed by the closure of the glottis. The expiration suddenly bursts open the glottis, producing a current of high velocity which tends to sweep obstructive particles outwards through the mouth. The action—which is automatic, although it can be modified by voluntary efforts—normally has a salutary effect in preventing these particles reaching the lung field and setting up foci of infection there. It may, however, lead to excessive disturbance and exhaustion in some diseases. Coughing may be caused by irritation in the nasal passage, pharynx, larynx, trachea, bronchial tubes, or lungs, due to the presence of particles of dust or food, or to inflammation. The breathing of acrid vapours has the same effect, and gastric or purely nervous disturbances may constitute a cause. Some varieties of C. may be recognised by their characteristic sound: pleurisy (q.v.) gives rise to a half-suppressed C., bronchitis (q.v.) causes a loud and explosive C., whooping C. (q.v.) is accompanied by a violent inspiration, which causes the characteristic whoop, while the purely nervous C. has an affected sound. The treatment depends on the predisposing cause, as it is often inadvisable to check a C. as such. It is to be observed, however, that continued coughing produces an ultra-sensitive condition of the respiratory passages, and, as so often happens, nature's method of eliminating irritating substances may be too vigorous for the comfort of the organism as a whole. In young children coughing may produce hernia, and there is possible danger of rupture of blood-vessels in consumptive patients. Remedies fall into two classes: expectorants, which help in the expulsion of irritating substances, and sedatives, which tend to allay the sensibility of the nerves causing coughing.

Couillet, industrial in the prov. of Hainaut, Belgium, 1 m. S. of Charleroi. It has coal-mines, chemical works, ironworks, and furnaces. Pop. 13,900.

Coulanges, Numa Denis Fustel de, see **FUSTEL DE COULANGES**.

Coulmiers, Fr. vil. in the dept of Loiret, 12 m. from Orleans. The French defeated the Bavarians here in 1870 (see **FRANCO-GER. WAR**). Pop. 160.

Coulomb, Charles Augustin de (1736–1806), Fr. scientist, b. Angoulême. He is well known for research work in connection with magnetism and electricity, and he invented the torsion balance for measuring the force of electric and magnetic attraction. The practical unit of quantity of electricity is named after him. In 1779 his essay, *Théorie des machines simples*, secured a prize offered by the Academy, of which he afterwards became a member.

Coulomb, practical unit of quantity of electricity, being the quantity conveyed by a current of 1 ampere in 1 second. It is so called after the Fr. physicist and engineer. See **AMPERE**.

Coulommiers, Fr. tn in the dept of Seine-et-Marne, on the Grand-Morin. It has printing works, and manufs. sugar and Brle cheese. Pop. 7700.

Coulson and Purley, urb. dist. of Surrey, England, about 3 m. from Croydon. There are light engineering industries and chalk quarrying. Pop. (1954) 64,180.

Coulter, John Merle (1851–1928), Amer. botanist and educationalist, b. Ningpo, China, educ. Hanover College. Botanist on the U.S.A. Geological Survey in the Rockies, 1872. President of the Amer. Association for the Advancement of Science (q.v.) in 1918. Pubs.: *Plant Relations*, 1899, 1910; *Plant Structures*, 1899, 1904; *Plant Studies*, 1902, 1904; *A Text Book of Botany*, 1906; *Manual of Rocky Mountain Botany*, revised ed. 1909; *Fundamentals of Plant Breeding*, 1914; *Evolution in Sax. Plants*, 1914; and *Plant Genetics*, 1918.

Coumarin, one of the most widely used synthetic crystalline aromatics in fancy perfumes for soaps and creams and in flavours. It occurs naturally in a number of plants, of which tonka beans, dates, leaves of woodruff, meililot herbs may be mentioned. It has a pleasant spicy odour recalling that of new-mown hay and a characteristic bitterish flavour much appreciated in confectionery, liqueurs, and tobacco.

Coumarouna, see **DIPTERYX**.

Council Bluffs, city and railway centre, cap. of Pottawattamie co., Iowa, U.S.A., on the Missouri R. opposite Omaha, Nebraska, with grain elevators and stockyards. It manufs. food products, machinery, tools, railway equipment, batteries, radio parts, and plastics, and is the seat of Iowa School for the Deaf. It was named after the 1804 council between (Meriwether) Lewis and Clark and the Indians. C. B. was an outfitting point for the gold rush of 1849, and became the E. terminus of the Union Pacific Railroad in 1863. Pop. 45,400.

Council of Europe, estab. in 1949 by agreement of the consultative council of the Brussels treaty (q.v.) organisation, consisting of a consultative assembly and a council of ministers. Its headquarters are in Strasbourg. Although having no statutory force the Council of Europe has played a considerable part in preparing the ground for subsequent treaties among groups of its members on economic and defensive topics, all tending towards the European unity which is the Council's ultimate goal. See further under **EUROPE. History**.

Council of Industrial Design, see **INDUSTRIAL DESIGN**.

Council of National Defense (U.S.A.), body created by Act of Congress in Aug. 1916, and inaugurated in the spring of 1917, to co-ordinate the industries and resources of the nation. It included the secretaries of war, navy, interior, agriculture, commerce, and labour, and it

was responsible for the creation of sev. organisations, each of which had special functions bearing directly on the successful prosecution of the war. The C. was assisted by an advisory commission. The principle underlying its formation was adopted throughout the States, and state C.s of N. D. were formed with duties similar to those of the parent body. It has been replaced by the National Security Council and National Security Resources Board.

Council of Ten, see TEN, COUNCIL OF.

Councils, Church (Lat. *concilium*, from *cum*, together, and root *cal*, to call), assemblies of eccles. dignitaries for the purpose of regulating some point of faith or discipline. The hist. of C. C. can be carried back to the 2nd cent. AD, when the churches of Asia Minor held C. to decide against Montanism. These early C. were evidently of a somewhat informal nature. Neither their composition nor their jurisdiction was clear. At various times more important C. comprehending a diocese or a prov. were called, but the rise of oecumenical C. throws these into the background. These general C. were convoked by the emperor. Bishops alone, or the representative priests or deacons of absent bishops, had the right to vote in early times. Abbots were later included, and cardinals who held no bishopric. At the Vatican Council cardinals, bishops, and generals of religious orders were allowed to vote. There is no proof that the papal legates exercised the presidency. Even Ultramontane writers of the Rom. Church agree that there is no more than a probability that they did so at Nicaea. The question as to the superiority of the Pope to an oecumenical council was hotly contested during the Middle Ages, but Rom. Catholics have now had the matter settled for them by the Vatican Council. Many medieval theologians also held that the decisions of a general council were only binding when they were received as such by the whole Church, and this practically resolves itself into a question as to which C. are oecumenical. St Augustine, in a treatise against the Donatists, affirms that plenary C. assembled from the whole Christian world may be corrected, but by the beginning of the 7th century was generally held that general C. were infallible. The modern Rom. Catholic theory is that the decrees of a council only become binding when ratified by the Pope. Though there is some difference in the manner of numbering the oecumenical C., the following method, that of Hefele, is the one generally adopted in the Rom. Church: (1) The first of Nicaea (AD 325), held at the height of the Arian controversy at the summons of Constantine, drew up the major part of the Nicene Creed. (2) The first of Constantinople (381) completed the Nicene Creed, defining the divinity of the Holy Spirit. (3) The Council of Ephesus (431), held to defend the faith against the Nestorians, safeguarded the personality of Christ by giving the title of *Theotokos* (Mother of God) to his mother. (4) The Council of Chalcedon (451) condemned the opposite heresy of Eutyches. (5) The second of

Constantinople (553), held against Nestorianism. (6) The third of Constantinople (680) condemned the Monothelite heresy. (7) The second of Nicaea (787) was concerned with the iconoclast controversy, and defined the respect to be paid to images. (8) The fourth of Constantinople (869) attempted to secure the peace of the E. and W. Churches by deposing Photius of Constantinople, who had unjustly obtruded himself into this see. These 8 C. were convoked by the emperor, and the first 7 alone are recognised by the E. Churches. All the rest are subsequent to the great schism. The 4 Lateran C. (Nos. 9-12) dealt with questions of discipline and condemned the Waldenses and Albigenses. The dates are 1123, 1139, 1179, 1215. In 1245 was held the first of Lyons (No. 13), in 1274 the second of Lyons (No. 14). The fifteenth council was held at Vienne in 1311. The sixteenth, the Council of Constance (1414-18), ended the scandal of the rival Popes. Then came the C. of Basle (1431 ff.) and Ferrara-Florence (1438-41), usually combined as No. 17. The C. of Lateran V (1512-17) and Trent (1545-63) were reforming C. The twentieth, held at the Vatican in 1869, defined the infallibility of the Pope. The great work on the subject is K. J. von Hefele's *Konkiliengeschichte* (7 vols.), 1855-74, completed by J. Hergenröther, 1887-90.

Coundouriotis, Paul (1855-1935), Gk adm. and president; b. in the isle of Hydra. He successfully commanded the navy in the Balkan war of 1912-13, and was minister of marine, 1915 and 1917-19. C. became regent on the death of King Alexander, 1920; and again on the departure of King George II, Dec. 1923. In April 1924 he was proclaimed president; he resigned Mar. 1926, but resumed office on 25 Aug. Re-elected 31 June 1929, he resigned 9 Dec. 1929.

Counsel, see ADVOCATE; BARRISTER.

Counsellor, in law, one who gives advice in legal matters, now always termed counsel. The term C. is retained as the full description of a queen's counsel in the ceremony of calling new 'silks' within the Bar. The peers of the realm are hereditary C.s of the Crown.

Count (Lat. *comes*, a companion), name derived from classical times, practically synonymous with the Eng. word earl of the present day. In the earliest times it was merely the name given to an attendant; but those who were the attendants of the Rom. emperor came, by reason of their office, to be much more important officials than mere attendants, hence the meaning of the word changed slightly. This was also the case under the Emperor Constantine, who made the word a title of some of his officials. Under the Frankish kings the word also meant more than attendant, the *comes palatii*, or C. of the palace, being the second highest official of the state. He eventually came to act as the representative of the king during the latter's absence. This same title was used also in other countries, and the C.s palatine, as they were called, ruled over certain provs. and made the title

hereditary by handing it down to their eldest sons. Later on, however, in France there were numbers of people who bore the title of C., many of them having merely assumed the title without royal grant. This title does not exist in England, the nearest approach being that of an earl's wife, who is a countess. In Germany the Graf seems to have been identical with the C. of other countries; the word still remains in the Eng. words margrave (or marquess) and landgrave.

Count Out. Forty members must be present either in a debate in the House of Commons or in a committee of the whole House, and it is the duty of the Speaker or chairman if he is not satisfied that there is a quorum of forty members to give the order for withdrawal of strangers and for the summons of members from the precincts of the House. Two minutes are allowed for additional members to assemble; if, after two counts, there are under forty, the House adjourns.

Counter: 1. Circular parry in fencing (q.v.).

2. Blow given as a reply to the opponent's lead in boxing.

Counter Irritants form a class of remedies used externally, which by setting up irritation relieve pain or congestion elsewhere in the system. Their effect is probably due to reflex action, caused by the impression they produce on the nerves of the skin. They are divided into three classes: (1) *Iubefacients*, which increase the heat and redness, e.g. hot water; (2) *Vesicants*, which produce blisters, e.g. cantharides; and (3) *Pustulants*, of which croton oil is an example. The use of the stronger C. I. should only be under medical advice, as great harm can be done by careless or injudicious treatment.

Counterfeit, see COINING.

Counterfort, in architecture, a buttress or arch built against a wall to strengthen it. C.s are frequently used when outward pressure is exerted on the opposite side of the wall by heavy constructional work, and in terraces to resist the pressure of soil.

Counterguard, term used to designate the rampart built lower than and running along the length of a bastion or ravelin, a ditch lying between them.

Countermine, see MINES.

Counterpoint, one of the most important devices of musical composition, best defined in non-technical terms as the art of combining two or more melodies in such a way that, looked at or listened to horizontally, they retain their individual quality, while vertically they produce satisfactory harmonies and progressions, with dissonances, where they occur incidentally, resolved into concord according to certain rules. The so-called strict C. is governed entirely by rules and has to be mastered by the student of composition; but it is rarely applied to any music that claims to be a work of art, where C. is far more often governed by the composer's imagination and feeling for satisfying combination. Double or invertible C. is the joining of two parts, or more (triple C., quadruple C., etc.), in combinations sounding equally well whichever part

is placed uppermost, in the bass, or (in the more numerous combinations) in the middle; but the complicated changes in the intervallic incidence of the parts which this involves make a knowledge of the rules the more imperative, even if, as often in modern music, the composer decides to disregard them and to let each part pursue its way regardless of passing disagreeable clashes. This kind of writing is now usually known as 'linear' C., the line traced by each part being more important than the harmonic results of their intersection.

Counter-Reformation, The, the revival in the Rom. Catholic Church which combatted and, within little more than 100 years, checked the advance of the Reformation (q.v.). Its main factors were as follows: (1) The revival of true piety and devotion at the heart of the Church. The Oratory of Divine Love, a sodality of priests founded at Rome, 1517, to restore the dignity of divine service and cultivate the spiritual life, included men of the highest calibre and of great influence, e.g. Caraffa (later Paul IV, 1555-9), Reginald Pole, and Morone. Paul III made 6 of its members cardinals, and commissioned from them a scheme for reform, the *Consilium delectorum cardinalium . . . de emendanda ecclesia*, 1538. Moreover, a series of popes of the highest moral and spiritual temper directed the Church throughout the period, while an extraordinary number of saints arose to invigorate her and by the foundation of new religious orders to recruit and train souls for her service: e.g. Philip Neri (1515-95), founder of the Oratorians; Ignatius Loyola (1491-1556), founder of the Jesuits; Teresa of Avila (1515-82), founder of the Discalced Carmelites. Other great saints of the period were John of the Cross, Charles Borromeo, John of God, Francis Xavier, Peter of Alcantara, Vincent de Paul, and Francis de Sales; among the new orders were the Capuchins, Paulines, Barnabites, and Ursulines. But the most powerful instrument of the C. R. undoubtedly was (2) the Society of Jesus, founded 1534, originally for the conversion of the heathen (for its achievements, see JESUITS; MISSIONS, *Roman Catholic*) and sanctioned, 1540, by Paul III, who also in 1542 founded (3) the Rom. Inquisition (q.v.) which, with the Sp. Inquisition extinguished Protestantism and heresy in Italy and Spain. In this connexion the Index of Prohibited Books, instituted by Paul IV, 1559, should be mentioned, and the brutal massacre of 2000 Waldenses in Calabria, 1562. Paul III also deserves credit for summoning (4) the Council of Trent (q.v.), 1545-63, which laid the dogmatic and disciplinary basis of the C. R., abolished many abuses, and started the specialised training and formation of the clergy by ordering and regulating the institution of seminaries. The amazing exploits of (5) Catholic missionaries, especially Jesuit, also provided a thrilling stimulus to emulation in the Church at home (see MISSIONS, *Roman Catholic*). In 1622 the Congregation de propaganda fidei was set

up. (6) Education was another potent weapon of the C. R., and in 1558 St Peter Canisius produced his *Triple Catechisms* which went through 200 eds. before his death in 1597. In the innumerable Jesuit schools and colleges many of the (7) rulers who used their political power on the side of Rom. Catholicism had been brought up, e.g. the Emperor Ferdinand II (1619-37) and the Elector Maximilian of Bavaria (1519-1651). See L. Pullan, *Religion since the Reformation*, 1924; H. J. Kidd, *The Counter-Reformation*, 1933.

Counterscarp, military term to denote that side of a ditch in fortifications which confronts the attacking force, the inner side being known as the escarp or scarp.

Countersign, military term for a watchword or sign previously arranged to prevent unauthorised persons from passing a line of sentries.

Countertenor, the highest adult male voice produced naturally, i.e. without falsetto, as in the case of the male alto. The range is short, from about G below the treble stave to E at its top, and it occurs extremely rarely, though it is now cultivated again for the performance of old music. It is used most frequently in 17th-cent. vocal music, notably that of Purcell, who was himself a C.

Countervailing Duty, term applied to describe import duties imposed by a gov. to protect home industries against foreign competition or the dumping of foreign products on an unprotected market. Examples of C. D.s are the duties fixed by the Brit. Gov. under the Safeguarding of Industries Act.

Countervallation, or **Contravallation** (Lat. *contra*, against, *vallum*, a rampart), term used with reference to fortifications, and signifying a chain of forts constructed round a besieged place to prevent any sorties by the garrison. These redoubts, which were put up by the besieging army, could be disconnected or joined by means of a parapet.

Countess of Huntingdon's Connection, or **Huntingdonians**, sect of Calvinistic Methodists founded in 1748 by Selina, Countess of Huntingdon (1707-91), widow of the ninth earl. Coming under the influence of John Wesley, she became a member of his religious society in Fetter Lane in 1739, but when he renounced Calvinism she supported George Whitefield, and made him her domestic chaplain in 1748. Whitefield's personality and preaching attracted many notable people to her house in Park Lane, including Lord Chesterfield, Bolingbroke, and Horace Walpole. Later the countess built chapels in Brighton (1761), Bath (1765), Tunbridge Wells (1769), Worcester (1773), Spa Fields, London (1779), and many other places, while in 1768 she instituted Trevecca College, near Talsgarth, Breconshire, for the theological training of her chaplains. She seceded from the Church of England in 1783 when the bishops refused to ordain her protégés, thus becoming a dissenter; and in 1790 she evolved a scheme for the perpetuation of the Connection after her death. In 1792 the lease of Trevecca House expired and

Cheshunt College in Hertfordshire was opened, but was transferred to Cambridge in 1906. Spa Fields chapel was transferred to Golders Green in 1910. Most of the churches are now served by Congregational ministers. See the ann. reports of the Countess of Huntingdon's Connection.

Country Dance, originally an Eng. dance practised by C. people in the open air. It was introduced into France (1715-23) under the erroneous name *contre-danse*, and passed on to other countries, where it lost its rustic character and became a ballroom dance. In Eng. the word C. D. is especially applied to dances with 2 long lines of an indefinite number of couples facing each other. The dancers are continually changing their places, as in the 'Swedish' and 'Sir Roger de Coverley.' In recent years there has been in Great Britain a revival of interest in these dances, under the aegis of the Folk Dance and Song Society. See Steele, *Spectator*, 2 (1711).

'Country Life', weekly periodical founded by the late Edward Hudson in 1897 to cover racing, hunting, and other outdoor sports. More recently it has owed its reputation to its descriptions of country houses, its articles on collecting and the fine arts, and the high standard of its photography.

'Countryman, The.' quarterly non-party review, pocket size, founded in 1927 by J. W. Robertson Scott, now owned by the proprietors of *Punch* and edited by John Cripps at Burford, Oxfordshire. Its circulation has risen to over 80,000. It covers every aspect of rural life except field sports.

County (derived from the Lat. *comitatus*, through the Fr. *comte*). C. or shire is a term used to designate a specific area of a kingdom for administrative purposes. In the United Kingdom the boundaries of the C.s in some cases combine dists, which were formerly old kingdoms, notably Kent, Surrey, and Sussex, while other C.s have been formed by Acts of Parliament. The C.s are themselves combinations of hundreds, and have their own officers for the administration of certain local matters and an elective C. council. In the U.S.A. C.s are divs. of the states made by the state legislature primarily for purposes of law, their powers differing widely in each state. See LOCAL GOVERNMENT.

County Clerk, see LOCAL AUTHORITIES, OFFICERS OF.

County Council, created by the Local Government Act, 1888, as the unit of local government for the management of the administrative and financial business of a co. or div. of a co. Before the Act the vast increase in the activities of the State in matters of local government found expression in the periodical creation of numerous local boards acting independently of each other, and in the gradual extension in all directions of the administrative duties of justices of the peace in quarter sessions. The consequent overlapping of local governmental areas, nearly every public authority dividing the country differently and with no reference to other divs., led to a lack of coherent

principle in the performance of these delegated State duties. The Act of 1888, by creating bodies in area and personnel truly representative of cos., effected a considerable measure of uniformity in the world of local government. The term county, or administrative county, as used in the Act is not synonymous with county in the ordinary sense. By adopting the existing tin councils in the municipal bors. (see also BOROUGH) as co-ordinate bodies with the C. C.s the term C. C. includes a number of large tins with a pop. of over 75,000 each in the category of administrative cos. Under the Local Government Act, 1933, a bor. council may not promote a Bill to constitute the bor. a co. bor. unless the pop. is 75,000 or upwards (The first Schedule to the Local Government Act, 1933, gives 49 administrative cos. for England, excluding London, and 12 for Wales; and 80 co. bors. in England and 3 in Wales.) Means were provided for creating additional administrative cos. as occasion requires by Order in Council, e.g. Isle of Wight, 1889. Further, some cos. possess more than 1 C. C., e.g. Yorkshire is divided into 3 administrative cos., the N., E., and W. Ridings, the W. Riding comprising as much of the wapentake of the co. of York as is not included in York bor. Lincoln is divided into 3 administrative cos., and Suffolk and Sussex into 2 each; while the administrative co. of London, under the London C. C., comprises the metropolitan portions of Middlesex, Kent, and Surrey. The C. C. consists of a chairman, aldermen, and councillors without restriction as to sex. The chairman is elected annually by the C. C. from among the co. aldermen and councillors, or persons qualified to be aldermen or councillors; and unless he resigns or ceases to be qualified he continues in office until his successor becomes entitled to act as chairman. During his term of office the chairman continues to be a member of the C. C., notwithstanding the provisions of the Act of 1933 as to the retirement of co. councillors at the end of three years. Aldermen are elected by the councillors from co. councillors or persons qualified to be co. councillors; the number of aldermen is one-third of the number of co. councillors, and in every third year, being the year in which co. councillors are elected, one-half of the total number of aldermen must retire. Co. councillors are elected for 3 years, and they must retire together in every third year in April. Clerks in holy orders and peers owning property in the co. may serve as aldermen or councillors, and, generally, the qualification for councillors is the same as for bor. councillors. Persons of either sex registered as co. electors, or enrolled burgesses of any non-co. bor., are qualified as co. electors, the qualifications for the franchise being the same for men and women (Representation of the People Acts, 1948 and 1949; and Local Government Act, 1933, section 7).

The constitution of the London C. C. differs somewhat from that of other C.C.s. Each parl. div. in London co. elects 2

members to the council with the exception of the City, which elects 4, making a total of 124 councillors. The 20 aldermen are elected as in the case of other councillors. The functions of the C. C.s comprise a great variety of duties original and supervisory, and until 1933 the Ministry of Housing and Local Government had the power to transfer to them the statutory powers, duties, and liabilities of the Privy Council, or any gov. dept, relating to matters of administration within the cos. The co. police outside the Metropolitan area are under the joint control of sub-committees appointed by the C. C. and the justices of quarter sessions. The C. C., since the Education Act, 1944, is the local education authority, except that local educational divisional executives may be estab. where the pop. is 60,000 or there are 7000 primary school pupils. A C. C. has the same power of making by-laws as a bor. It is also the highway authority for all co. roads (see HIGHWAYS and below) and may make contributions towards the cost of maintaining and improving any highway or public footpath, although not a co. road; and it has special duties as to the repairs of co. bridges. It has certain duties appertaining to public health, administering the Acts relating to noxious insects and pests, and preventing the pollution of rivers, and abuses in selling bread and coal. Under the Housing Acts it may assume the powers of a defaulting rural dist. council in the duty of providing housing accommodation, and is charged with the duty of appointing a co. medical officer of health. It may prepare draft schemes for small holdings and lend money to tenants purchasing small holdings. It sanctions the compulsory purchase of land for allotments (statutory provisions on the powers of C. C.s to acquire and deal in land are to be found in the Local Government Act, 1933, part vii). It grants music, dancing, and race-course licences. It appoints the coroner (q.v.) for the shire, the co. surveyor, and the public analyst. It may fix the boundaries of dist. and par. councils subject to confirmation by the Minister of Housing and Local Government, and make orders for grouping pars. into one administrative unit with their consent. Over smaller local governing bodies it exercises under various Acts large supervisory powers, and generally it is responsible for the proper working of the Local Government Acts within its boundaries. Its powers in relation to finance are considerable. It does much of the work once exclusively performed by quarter sessions. It sanctions loans by par. councils, and itself has large borrowing powers on the security of its ann. revenue, subject to the control of the Ministry of Housing and Local Government: chiefly for the execution of permanent works. The revenue of the C. C. apart from the co. rate is derived chiefly from royalties, fines, tolls, and rents, together with State subventions. Very extensive powers have been vested in the London C. C., and others have been added. With the necessary modifications the Local Government Act of 1888 did not

extend to Scotland or Ireland. The Act of 1894 applies only to England and Wales.

There has been a distinct trend in modern legislation to use more and more the machinery of the C. C.s for the administration of local government. The Education Act of 1902 transferred to them work of the highest importance from a national point of view, and, as a result, there has been a perceptible levelling up in the standard of primary and secondary education throughout the country. More work was given to them by the Local Government Act of 1929, which abolished Boards of Guardians and transferred the functions of the poor law authorities as from 1 April 1930 to the council of the co. or co. bor. comprising the poor law area for which the poor law authority had previously acted. To-day, however, local authorities are no longer responsible for the relief of the poor, a National Assistance Board having been set up to administer a State scheme. In view of the remarkable development in road transport in the last two decades, the administration and maintenance of roads became a matter of vital importance, and the same Act made certain provisions with regard to them which affected C. C.s. As from 1 April 1930 the following are co. roads: (1) main roads; (2) roads constructed by a C. C. with the aid of an advance by the Road Board (no longer existing) or Ministry of Transport; (3) roads declared by a C. C. to be main roads; (4) roads built under the Development, etc., Roads, etc. Act, 1909; (5) highways in rural dists. which before 1 April 1930 were controlled by rural dist. councils; (6) classified roads which were or are vested in bor. councils and urb. dist. councils; (7) any ordinary road which a C. C. on application of an urb. dist. council declares to be a co. road or which the Ministry of Transport so declares on appeal by an urb. dist. council. Co. roads, however, may cease to be such by an order of the Ministry of Transport on application of the C. C. Certain bor. and urb. dist. councils may claim to maintain a co. road within their area, but the C. C. must pay for the work. The following lists are a broad attempt to show the present distribution of functions to C. C.s, co. bor. councils, and the London C. C. The lists are, however, liable to much local variation. C. C.s: registration of births, deaths, and marriages; various by-laws; adoption and boarding out, etc. of children; education (including school medical service and meals); registration of electors; licensing of entertainments (theatres, cinemas, race-courses); analysis of fertilisers and feeding stuffs; inspection, analysis, etc. of food and drugs; housing (assistance in rural areas); land charges registration; libraries and museums; motor vehicles and drivers' licensing; nursing homes registration; parks and open spaces; petroleum storage and stations; police (through a joint standing committee of the C. C. and the co. justices); remand homes; prevention of pollution of rivers; maintenance of roads and bridges;

inspection of shops; inspection of weights and measures; and protection of wild birds. The functions of co. bor. councils include all the above, but police are controlled by a Statutory Watch Committee. In addition the following: provision of allotments; baths, swimming baths, and wash-houses; control of building; cemeteries; control of common lodging houses; notification and disinfection of infectious diseases; mortuaries; suppression of nuisances; sanitary services—drains, sewerage, refuse disposal; smoke abatement; and vaccination. The functions of the London C. C. include most of those of the C. C.s generally, excepting registration of births, deaths, and marriages; registration of electors; analysis of fertilisers and feeding stuffs; food and drug inspection; libraries and museums; police; and wild birds protection. But the London C. C. has the following additional functions: control of building; provision of houses; road construction, as well as maintenance; and prevention of Thames floods.

In Canada, in Ontario, Quebec, and New Brunswick, where rural local government areas are known as cos., the C. C. is made up of the elected reeves and deputy reeves of the townships and vils. In some cos. the smaller tns are also part of the co., and in that case the mayor of the tn is also a member of the C. C. These Canadian C. C.s, whose presiding officer is chosen by the council and is called a warden, control all matters of general interest to the whole co., such as health, education, welfare, and roads. See also LOCAL GOVERNMENT.

County Courts. Historically a co. court was a development of the judicial side of the shire-moot and the old court of requests or 'lesser Court of Equity for the hearing of poor man's suits.' Civil jurisdiction of C. C. ceased when the judges of the Curia Regis travelled the country on circuit to hear cases at local assizes. The modern C. C. were set up in 1846 to deal with cases involving less than £20 for the benefit of persons who could not afford to litigate in the higher courts. Subsequent statutes, the most recent being the County Courts Act, 1955, have increased their jurisdiction. The County Courts Act, 1846, divided the country into co. court dists. At present there are 59 dists. or circuits in England and Wales, to each of which are assigned one or more judges. The lord chancellor is empowered to appoint up to 80 judges. A co. court judge, who must be a barrister of at least 7 years' standing, may not practise at the Bar or sit in Parliament. Actions are usually tried by judge alone, trial by jury being very rare. The less important cases are tried by the co. court registrars (q.v.), who also deal with interlocutory proceedings (q.v.). Co. court procedure is simpler and less costly than that of High Court actions.

The C. C. have jurisdiction in: (1) actions involving contract and tort (q.v.) for amounts not exceeding £400; (2) actions for the recovery of or concerning the title to land or hereditaments whose net

ann. value for rating purposes does not exceed £100; (3) equity actions in which the value of the matter in dispute does not exceed £500; (4) probate and admiralty actions limited to £1000; (5) actions remitted from the High Court; (6) bankruptcy petitions in dists. outside a radius of 5 m. of the Royal Courts of Justice, Strand. A wide range of miscellaneous matters are by various statutes referred to C. C. for decision (e.g. the granting of new leases under the Landlord and Tenant Act, 1954, disputed rent increases under the Housing Repairs and Rents Acts, 1954) (see LANDLORD AND TENANT).

Unlike the High Court, C. C. may order judgment debts to be paid by instalments.

County Rates are the part of the general rate collected by precept of the co. council (q.v.), in connection with local gov. expenditure to meet deficiencies not provided for out of revenue or Exchequer grants. Some purposes for which a precept may be issued are the cost of the assizes and co. sessions, half the approved net expenditure of the co. police, and expenses under the Education Act, 1944. See also LOCAL GOVERNMENT FINANCE.

County Sessions, the general or quarter sessions of the peace for the co., sit to try such crimes as statute law expressly permits them to try, and hear appeals against summary convictions where a right of appeal is given by statute to the person convicted. Quarter sessions in



COUNTY HALL, LONDON

London County Council

County Hall, Lambeth, is the headquarters of the London Co. Council (q.v.). It is situated on a site of 6½ ac., partly reclaimed from the riv. foreshore, running northwards along the S. bank of the Thames from Westminster Bridge. The building, designed by Ralph Knott (who was influenced by Piranesi), was begun in 1911 and the S. part of the riv. frontage completed in 1922, when C. II. was formally opened. The N. part was completed 1931-3, and the total cost was nearly £4,000,000. There are 9 floors and nearly 1000 rooms, among them a large council chamber, a large library devoted to London hist., etc., 22 committee rooms, and rooms devoted to an art collection and MSS. relating to London. There is also an Extension Building between Bolyvère Road and York Road. C. II. has a staff of about 6000.

cos. must be held within a period of three weeks immediately before and after the four quarter days. Quarter sessions in hors. are fixed by the bor. recorder. The court is constituted by two or more justices of the peace presided over by a chairman. Generally speaking, the criminal jurisdiction of the C. S. is restricted to minor felonies and misdemeanours, the more serious crimes being tried at assizes. They are forbidden to try treason, murder, or any capital felony or any felony punishable by penal servitude for life. They also exercise jurisdiction in rating appeals and the licensing of places for the sale of intoxicants.

Coup. A *coup d'état* is an arbitrary stroke of policy, carried out suddenly both violently and illegally by the ruling power, with entire disregard of the prerogatives of other parts of the body politic.

The two most famous instances are Napoleon Bonaparte's C. of 1799, ending the directory by his 'whiff of grapeshot,' and that of Louis Napoleon, which broke up the national assembly by force, 1851. A *coup de main* is a sudden and successful attack, made to capture a position instantaneously. A *coup d'œil* (glance) means a rapid, comprehensive view of a complicated matter, often used of the faculty of taking a general survey of a military position and estimating its advantages and disadvantages. *Coup de grâce* is the merciful final blow which puts a victim out of pain, hence a decisive or finishing stroke. A *coup de théâtre* is a trick of the stage, or any sudden sensational act.

Coupár-Angus, par. and burgh of Perthshire, Scotland, near R. Isla, 12 m. from Perth. There are remains of a Rom. camp, and also of the Cistercian abbey, founded 1164 by Malcolm IV. C. has a cannery, and there are steam saw-mills and agric. implement works. Pop. 2175.

Coupé (*Coupé*), heraldic term used to describe the head or any limb of an animal, or a part of a plant, represented as cut off clean and smoothly in a straight line. Where the representation is jagged and uneven, as if forcibly torn off, it is blazoned 'erased.' *Coupé* (from Fr. *couper*, to cut) is also applied to an ordinary with extremities cut off so as not to reach the shield's boundaries.

Couperin, François (1668-1733), Fr. organist, harpsichordist, and composer, the greatest member of a large musical family. Learnt music from his father, Charles C. (1638-79), his uncle François C. (c. 1631-1701), and from Jacques-Denis Thomelin, organist of the king's chapel. Appointed organist at the Paris church of Saint-Gervais in 1685, where he remained until his death. In 1693 he succeeded Thomelin as organist to the king, and in 1717 received the title of Ordinaire de la Musique de la chambre du Roi. He had been connected with the court before and taught the royal children. In wider circles, too, he was famous as harpsichord teacher, and laid down his system in the treatise *L'Art de toucher le clavecin*, 1716. He married Marie-Anne Ansault c. 1689, and they had two daughters, the second of whom, Marguerite Antoinette, b. 1705, became a distinguished harpsichordist. Works include 4 books of harpsichord pieces (c. 230); 42 organ pieces; 4 *Concerts royaux* for harpsichord, strings, and wind instruments; 10 chamber concertos, *Les Godels-réunis*; 4 suites for strings and harpsichord, *Les Nations*; chamber sonata *Le Parnasse, ou l'Apothéose de Corelli* and *L'Apothéose . . . de Lully*; 2 suites of pieces for viols with figured bass; some miscellaneous chamber works; 12 songs for one, two or three voices; church music includes *Laudate pueri Dominum, Leçons de Ténèbres*, a number of motets, etc. See life by A. Tessier, 1926; J. Tiersot, *Les Couperin*, 1926; W. Mellers, *François Couperin*, 1950.

Couperus, Louis-Marie-Anne (1863-1923), Dutch poet and novelist, b. The Hague, but spent his boyhood years in the

Dutch E. Indies. His first works were two collections of poems, *Een Lent van Faerzen* (Springtide of Verso), 1884, and *Orchideeën*, 1886. His first novel, *Eline Vere*, 1888, a vivid picture of society at the Dutch cap., won him fame. He united in his writings the ideas and tendencies of both Fr. and Scandinavian literature. Other works are *Noordijl*, 1890; *Extase*, 1891; *Majesteit*, 1893; *Vereldvrede*, 1894; *Mcianorfoze*, 1897; *Over lichtende Drempels*, 1903; *Dionysos*, 1904. C. also wrote the fairy-tales *Psyche*, 1897, and *Fidessa*, 1899. He has a preference for portraying decadent times and people, which he describes with great psychological insight. Most of his novels have been trans. into Eng. by A. Toxela de Mattos. See J. L. Walsh, *L. Couperus*, 1921; H. van Booven, *Leen en Werken van L. Couperus*, 1933.

Couple, in statics, consists of two equal forces acting in opposite directions on a body along two parallel straight lines. It is impossible for a C. to keep a body in equilibrium, for any C. tends to rotate the body. The distance between the lines of action of the two forces is known as the arm of the C., and the moment is the product of one of the forces and the arm of the C.

Coupled Circuits are electric circuits so placed or connected that energy can be transferred from one to the other. Circuits which have a resistance or reactance in common are resistance- or reactance-coupled. The primary and secondary of a transformer are inductively coupled. Two coils so placed that magnetic flux produced by a current in one (primary) is linked with the other (secondary) have mutual inductance M defined as M (in henrys) = $10^{-8} \times$ (linked flux in secondary produced by primary current)/(primary current). If L_1 and L_2 are the primary and secondary inductances, the maximum M would occur if the whole flux were linked with both circuits, $M' = L_1 \times L_2$. The ratio $M/\sqrt{(L_1 L_2)}$ is the coefficient of coupling. Coupling a secondary coil to a primary has the effect of adding an impedance $(\omega M)^2/Z_1$ to the primary, where Z_1 is the secondary impedance. The induced voltage in the secondary is $-\omega M I_1$, where I_1 is the primary current. See ALTERNATING CURRENT; CIRCUITS, ELECTRIC; ELECTROMAGNETIC INDUCTION.

Couplet, 2 lines of verse, usually of the same length, rhyming and forming a unit. The commonest forms in Eng. are the heroic C. (see HEROIC VERSE) and the octosyllabic C.

Coupon, document attached to a share warrant, bond, or other negotiable instrument, indicating the dates on which dividends or other periodical payments will become payable. Share warrants are a device for legalising the issue of fully paid shares payable to bearer, and when issued the name of the shareholder is struck off the register, because henceforth the holder is the person who happens to hold the warrant; the company neither knows who he may be nor who is entitled to the dividends. Hence the necessity for

attaching C.s dated with the successive dates on which dividends will be paid, during sev. years following the issue of the warrant, to the person producing them. The C.s attached to bonds issued for any term of years represent the total number of periodical payments of interest, whether quarterly, half-yearly, or yearly, that will become payable, the date of such payments being printed on each C. On the date of any one payment maturing, the holder of the bond merely detaches the C. and presents it for payment at a specified bank.

'Coupon' Election, general election of Dec. 1918, which returned the Coalition Gov. of Lloyd George. After the armistice Lloyd George and his Cabinet resolved on an immediate election in order that he might go to the peace conference with the authority of a new Parliament behind him. The gov. fought the election as a coalition and both Liberal and Conservative supporters of the coalition received a letter of support from Lloyd George and Bonar Law, leader of the Conservatives. The Asquithian Liberals were refused such a letter, as also were candidates of the Labour party, other than a few who remained with the gov. This letter from the leaders of the gov. was nicknamed a C. by its opponents, and so the election has become derisively known as the C. E.

Courante, It. *coranto*, Fr. dance which was popular in the 17th cent. The term is also used in music for a movement with a distinct rhythm in 3-2 time, generally forming part of a suite and coming immediately after the Allemande. Bach and Handel have C.s in 3-8 and 3-4 time.

Courantyne, or Corentijne, riv. of S. America, forming the frontier of Brit. and Netherlands Guiana. It rises in the Acaia Mts., and has a length of 450 m. The C. is navigable for large vessels for 45 m. upstream, and for small ones for a further 30 m., but great cataracts in about 4° 20' N. lat. and sev. others higher up interrupt the navigation. See also NETHERLANDS GUIANA.

Courbet, Gustave (1819-77), Fr. painter, chief of the realists, b. Ornans, near Besançon. He left the study of theology for art, became a pupil of Steuben, d'Angers, and Hesse in Paris, but was largely self-taught. C. was much influenced by Flemish and Venetian masters, but his aim, in his own words, was to 'interpret the manners, ideas and aspect' of his own time. He was a member of the com., 1871, and in 1875 was jailed and forced to pay for re-erecting the Vendôme column, which he was accused of pulling down. A great painter, but also a revolutionary, he died in exile. Among his portraits and figure-paintings are 'Homme à la Pipe', 1844; 'Casseurs de Pierres', 1850; 'L'Enterrement à Ornans', 1850 (now in the Louvre); 'Fair Dutchwoman', 1853; 'Demoiselles de la Seine', 1857; 'Man with a Leather Belt', 1870. C. is at his best with landscapes of his native Franche-Comté, such as 'Combat de Coris', 1861; 'Remise de Chevreuils', 1866; 'The Wave', 1870.

See lives by H. d'Ideville, 1878; L. Bénédite, 1911; C. Léger, 1929; P. Courthion, 1931; M. Zahar, 1953.

Courbevoie, Fr. tn in the dept of Seine, on the Seine, a NW. suburb of Paris. It has numerous manufs. including automobiles, chemicals, and textiles. Pop. 59,700.

Courcelles, tn in the prov. of Hainaut in Belgium, about 5 m. NW. of Charleroi, with coal, iron, and glass industries. Pop. 17,900.

Courier (or Courier de Méré), Paul Louis (1772-1825), Fr. writer, b. Paris, and educ. at the Collège de France and at a military academy, devoting himself to Gk literature. Starting as a pure writer of belles-lettres, he became a journalist and the leading Fr. pamphleteer, noted for his irony. In *Pétition aux deux Chambres*, 1816, he described the grievances of the peasantry; in *Lettre à Messieurs de l'Académie des Inscriptions*, 1819, the most brilliant of all his writings, he flagellated that learned body for having preferred to him in their last election a man whose only advantage was noble birth. His best known writing, however, was his *Simple discours*, one of a series of pamphlets addressed to his 'fellow villagers' and signed 'Paul Louis Vigneron.' For this he was fined and imprisoned for two months. He was shot on his small estate in Touraine by a farm hand whom he had dismissed from his service. As an author and satirical writer he was brilliant, rich in contemporary historical knowledge and classical quotations. His collected works were pub. in 4 vols. in 1830.

Courier (derived from the Fr. *courir*, to run), term applied to servants whose duty is to relieve their employer of trouble when travelling by making all the necessary arrangements for transport, hotel accommodation, securing passports, etc. Prior to the formation of the post office, messengers were employed to deliver letters and messages and were known as C.s. Important dispatches to foreign embassies are still frequently delivered by the king's messenger or Foreign Office C.s.

Courlan, Caran, Crying Bird, and Crazy Widow, popular names of the wading-bird *Aramus scolopaceus*, which is found in S. America. The bird is noted for its peculiarly dismal cry.

Courland, see KURLAND.

Cournot, Antoine Augustin (1801-77), Fr. mathematician, philosopher, and economist, b. Gray. He is chiefly noted for work on the calculation of probabilities, and his foundation of the so-called mathematical school of social economy. He wrote *Recherches sur les principes mathématiques de la théorie des richesses*, 1838, *Exposition de la théorie des chances et des probabilités*, 1843, and *Principes de la théorie des richesses*, 1863.

Cours, Fr. tn in the dept of Rhône, on the Trambouze. Cotton goods, called Beaujolais, are manuf. Pop. 5200.

Coursing, pursuit of hares by greyhounds, not by scent but by sight. In ant times other game also was coursed

generally deer: the sport is described by Arrian about AD 150, also by other classic authors (see W. Dansey, *Arrian on Coursing*, 1831). Our own ancestors probably practised it as much to fill the larder as for sport. In Saxon and Norman times only nobles and landowners had the privilege of keeping greyhounds, but in the reign of Elizabeth rules for the sport of C. were drawn up by the duke of Norfolk, and during the next century open competitions came into vogue. But no regular club was formed until 1776, when Lord Orford founded one at Swaffham, Norfolk, and soon afterwards the Ashdown Park club was formed, holding its meetings at Lambourn, Berkshire. The sport spread widely, some of the finest courses being on the downs at Amesbury, Stockbridge, etc. After the passing of the Game Laws in 1831 C., which had hitherto been almost restricted to clubs, was more generally taken up, and in 1880 the passing of the Ground Game Act, greatly altering the conditions of the sport, led to the estab. of many enclosed courses. These were much favoured by betting men, as the whole run could be watched from a stand, but it was found that the system encouraged breeding entirely for speed, training for other qualities being neglected, and with keen sportsmen open courses are now most in favour. The season lasts from about Sept. to March, the Altcar or Waterloo meeting, which decides the championship, coming in Feb. The Waterloo Cup, the coursers' Derby, is so called from having been originated in 1836 by the proprietor of the Waterloo Hotel, Liverpool, who gave the cup and was lucky enough to nominate the first winner, Lord Molyneux's Milanic. In 1882 the *Greyhound Stud Book* was estab., and no dog not appearing there with properly traced pedigree can compete at any meeting under the rules of the National Coursing Club, a representative association formed in 1858, which governs C. all over the kingdom. Courses vary a good deal in their character; some particularly favour speed, e.g. Kempton Park, Surrey, where at the Jan. meeting the very fastest dogs are to be seen. But though speed is highly important, cleverness tells greatly in the estimation of points, and it is in the breeding and training for all requisite qualities that judgment, skill, and luck are required. A competition is held thus: the slip-steward sees that each slipper in turn is ready punctually, with his brace of hounds in leash, a hare is started (at an open meeting by beaters), and when it has about 60 yds start the hounds are simultaneously released, and the judge follows the run on horseback. He decides the points as follows: on *speed*; the *go-by*, when a greyhound starts a clear length behind, and in a straight run gains a clear length's lead; the *turn*, bringing the hare round at a right angle or more; the *wrench*, turning it at less than a right angle; the *trip*, throwing it over, but failing to kill; the *kill*. The judge may declare a 'no course' if the trial is not satisfactory, or a tie if

points are equal. His decision is signalled by the flag-steward. The victory goes not necessarily to the greyhound that kills, but to the one that does most to make the kill possible. Some experienced dogs are artful, and manage to get the kill themselves after leaving all the work to the others; this tendency has often been proved hereditary. C. in the Eng. style has been taken up in Australia and the U.S.A.; in the latter the prairie jack-rabbit often takes the place of the hare.

Court, Ecclesiastical, see ECCLESIASTICAL COURTS.

Court, Presentation at, formal presentation to the sovereign of subjects whose status entitles them to this honour. In monarchical countries this ceremonial function is considered the highest honour, and serves as a credential. Having once obtained this privilege people may claim to be presented by their country's representative at any foreign court and to be received everywhere. In England the names of those desiring to be presented and of their presenters must be sent some weeks in advance to the lord chamberlain. The privilege is strictly guarded from abuse, and none are admitted unless accepted and approved of both by the sovereign and the lord chamberlain. Each lady who makes a presentation is required to become sponsor (in its fullest sense) for her presentee. Cases of undesirable introduction are rare, but should they occur a notice may be printed in the *Court Circular* that 'the presentation is cancelled.' Those who are not Brit. subjects may be presented to the sovereign by their own ambas. At the end of Victoria's reign ladies were most frequently presented at drawing-rooms held at Buckingham Palace in the afternoon. When the Prince and Princess of Wales presided on her behalf, such presentations were by royal command counted as a presentation to the Queen. Gentlemen are presented usually at levees at St James's Palace, held in the morning. The first levee was held at Buckingham Palace, 1840. King Edward replaced the drawing-rooms by courts, held at Buckingham Palace in the evening, but levees also continued to be held at intervals. There was an elaborate ceremonial at these functions, and full court dress had to be worn by those invited.

Since the Second World War presentations have been made at the Buckingham Palace garden parties and in Scotland at Holyrood Palace.

Court Baron, necessary court of a baron. It was partly administrative and partly judicial. Other courts at the manors were the customary court and court leet.

Court for Crown Cases Reserved, see CROWN CASES RESERVED.

Court-hand, a term often used for the old Eng. style of handwriting, a modification of the Norman (as distinguished from the modern or It.), which was employed in the Eng. law courts from the 16th cent. till abolished by George II in the early 18th cent.

Court Leet, old court of record that originally had an almost plenary jurisdiction in the trial of crimes. Any lord of a manor with a right of 'sac and soc' (the right to hold a court for one's tenants and the right to the amercements or fines respectively) was entitled to hold a C. L. Their decline followed on the passing of the statute of Marlborough, 1267, but C.s L. are still occasionally held once a year before the stewards of certain lordships or manors.

Court-martial, see COURTS-MARTIAL.

Court of Appeal, see APPEAL.

Court of Arches, see ARCHES.

Court of Record, see RECORD.

Court of Session, supreme civil tribunal of Scotland. In its present form it was estab. in 1532 by the Act of Institution of the C. of S., as a development of previously existing tribunals which were generally independent committees of the Scottish Parliament. The C. of S. now consists of 15 judges. It has an Outer House in which sit 7 lords ordinary of co-ordinate jurisdiction, and an Inner House divided into a 1st and 2nd div., each div. consisting of 4 judges of co-ordinate jurisdiction. The president of the 1st div. is the Lord President; of the 2nd, the Lord Justice-Clerk. The 2 divs. of the Inner House are mainly appeal courts, but they have an original jurisdiction in certain actions relating to div. of common lands (commonry), sale of bankrupt estates, curatory of the insane, and special cases. At the hearing of an appeal from a jury case which comes before the div., the judge who presided at the trial sits along with the div. Original actions in the Outer House are heard in the first instance before any 1 of the 7 lords ordinary, but certain causes are specifically appropriated to particular judges. Appeals against valuations of lands and heritages, registration appeals, and election petitions are heard by specially constituted C.s of S. The C. of S. exercises no criminal jurisdiction as such, but gives a civil remedy in cases of perjury, fraudulent bankruptcy, forfeitures, and breach of arrestment, etc. The C. of S. has exclusive jurisdiction in exchequer, maritime, and teind (tithe) causes, and has superseded the consistorial and commissary courts in actions of status such as declarators (q.v.) of marriage, or separation, and the C. of S. alone may try questions of heritable right, unless the ann. value of the subject-matter does not exceed £50, or the total value does not exceed £1000. Where the value of the subject-matter in dispute does not exceed £50 the case may not be brought in the C. of S. There are 2 sessions, winter and summer, lasting from Oct. to March and from May till July, respectively. The judges of the C. of S. also form the High Court of Justiciary (q.v.).

Courtauld, Samuel (1876-1947), Brit. industrialist and art patron, second son of Sydney C. of Huguenot descent, of Braintree, Essex; educ. at Rugby School. He entered the family business of silk manufacturers, and soon became manager of the Halstead mill, and, by 1908, was

general manager of all the company's textile factories under H. S. Tetley, who had played a leading part in the development of rayon in England—a branch of textile in which C.'s were pioneers. Samuel C. was early trained in the chemical side of the rayon industry in Krefeld, Germany. In 1915 he was appointed to the board of the company and, in 1917, joint managing director with Henry Johnson; and finally, in 1921, he became chairman, thus succeeding to the leadership of the business founded 96 years previously by his great uncle, Samuel C., and by his grandfather. There have been in Brit. industry few parallels to the way in which C.'s came to dominate a new field and for a long time to hold the lead in research and production of rayon; and for all this C. was largely responsible during his 25 years as chairman. He spent his great fortune munificently. Not only did he form a collection of paintings of the Impressionist and post-Impressionist schools, chosen with conspicuous taste, but his generosity enabled the Tate Gallery to acquire masterpieces that would otherwise never have entered the public collection. In 1931 he founded and endowed the C. Institute of Art in the univ. of London, the first institute to be created in this country for the appreciation of art and the study of art hist.; and to house the institute he handed over his house in Portman Square, one of the finest examples in London of the work of Robert Adam, and with it the greater part of the collection of the Impressionist pictures which he had formed. The rest being bequeathed to the National Gallery. C. was also a trustee of the National Gallery.

Courtaulds Ltd, manufacturers of man-made yarns and staples, fabrics, plastics, and chemicals, estab. in 1824 as Samuel Courtauld & Company. The production of rayon, or artificial silk as it was originally called, was begun in 1904, with H.Q. at Coventry, and in 1910 factories were set up in the U.S.A., Germany, and Russia. The company was incorporated in its present form in 1913. It acquired jointly with Imperial Chemical Industries all capital of British Nylon Spinners. Spinning factories are estab. at Halstead and Braintree in Essex, Halifax in Yorks, and Leigh in Lancs. Other factories are at Flint, Coventry, Nuneaton, Wolverhampton, Bocking, Bradford, Froylsden, Greenfield, Preston, Rochdale, Grimsby, Holywell, Carrickfergus, and Trafford Park. In 1941 the Brit. Gov. acquired from the company about 95 per cent of its holding in Amer. Viscose Corporation (for the sake of the dollar exchange). In 1957 the company acquired the whole of the capital of its only serious competitor, British Celanese Ltd, it being claimed by both companies that the merging of interests would strengthen their ability to meet competition from imported textiles in the home mkt and also enable them to improve their position in export mtrks.

Courtenay, name of a distinguished Eng. family, at one time widely distributed in the W. country. The founder is said to

have been Athos, who fortified Courtenay in Gâtinois in the early 11th cent. Renaud, his descendant, was one of the magnates who fought in the Crusades. With his daughter Elizabeth the estate of C. passed to her husband Pierre, son of the Fr. king, Louis VI. There were numerous lines of royal C.s, sprung from Pierre of France. In England a house of C. has fl. since the reign of Henry II. Sir Hugh de C. shared in the honours of Crécy and Calais, and was one of the knight founders of the order of the Garter. The earldom was extinguished by attainder after the wars of the Roses, but in 1511 Henry VIII allowed Henry C. to succeed to it. Sir William C., a cousin of Henry C., who was beheaded for correspondence with Cardinal Pole, was head of a knightly line of C.s whose seat was Powderham Castle. The title of Earl of Devon, sev. times forfeited and recovered, is still held by the C.s. Henry C.'s son, Edward C., was created earl in 1553 and the present earldom dates from then. Charles Christopher C. (b. 1916) is the 17th earl.

Courtenay (Courtney), William (c. 1342-1396), archbishop, fourth son of Hugh, earl of Devon, and Margaret Bohun. He studied at Oxford, becoming chancellor of Oxford Univ., 1367; bishop of Hereford, 1370; bishop of London, 1375. As Wycliffe's prosecutor (1377) C. was involved in a quarrel with the duke of Lancaster. C. was archbishop of Canterbury, 1381-96. In 1382 he summoned a council, which met in the Black Friars' monastery to pass judgment on Wycliffe's heretical teaching. Wycliffe was allowed to go free, but many of his followers were compelled to recant. After Wycliffe's death, C. continued the systematic eradication of Lollardy from Oxford Univ. and elsewhere. C. was a strong upholder of the rights of the Church, and was very conscious of his rights as Primate; for the latter reason he was influential in carrying through the statute of Praemunire of Richard II's reign.

Courteras, Gabrielle Anne de Cisternes de, see DASH, COMTESSE DE.

Courtesy, see COURTESY.

Courtesy Titles, titles allowed by custom to the eldest sons of dukes, marquesses, and earls in the peerages of England, Ireland, and the United Kingdom; but the holders have no actual legal right to them. A peer of high rank may have numerous inferior titles, and while known himself by his highest title or titles, his eldest son bears one of the inferior titles by courtesy. The courtesy title need not be the next highest, and may differ in different generations. It does not affect the legal status of the holder, who, as a commoner, is still eligible for the House of Commons. Younger sons of dukes and marquesses take the title lord (q.v.), while the daughters assume that of lady prefixed to their Christian and surnames, still retaining it if they marry men of lower rank. The title honourable is applied to the children of earls, viscounts, and barons, although, as stated above, an earl's eldest son normally uses one of his father's inferior titles. In Scotland a viscount's or baron's eldest son is styled master.

Courthope, William John (1842-1917), literary historian, b. South Malling, near Lewes. Educ. at Harrow and New College, Oxford, he became prof. of poetry at Oxford, 1895-1901. Among his works are *The Three Hundredth Anniversary of Shakespeare's Birth*, 1864; *The Genius of Spenser*, 1868; *Ludibria Lunae*, 1869; *The Paradise of Birds*, 1870; *Addison*, 1884; *History of English Poetry* (6 vols.), 1895-1909. He ed. Pope's works in 10 vols. with a biography, 1871-89. C. was for a time joint editor of the *National Review*.

Courtmacsherry, seaside resort in co. Cork, Rep. of Ireland, 11 m. S. of Bandon. Pop. 250.

Courtneidge, Cicely (1893-), Brit. actress, b. Sydney, daughter of Robert C., theatre manager and producer. She made her first stage appearance at the Prince's Theatre, Manchester, which her father then controlled, as Peaseblossom in *A Midsummer Night's Dream*, 1901. The family then returned to Australia and she did not appear in this country again until 1907 when she played Rosie Lucas in *Tom Jones* at the Prince's Theatre, Manchester, in 1907. She made her first London appearance in the same part under her father's management at the Apollo Theatre in 1907. Since then she has had a long and brilliant career, here and in America and all over the world, not only in musical comedies but in revue and variety. She and her husband, Jack Hulbert, starred together for many years in very successful revues and musical plays. She has also had a brilliant film career and now stars in radio and television as well as on the stage and in straight plays. C. C. is one of the most accomplished comedienne of the Brit. stage possesses—with a wonderful technique and a complete mastery of the art of burlesque. Her force, her vitality, her timing, and clarity of diction are remarkable.

Courtney, William Leonard (1850-1928), Eng. journalist and author, b. Poona, India. He was educ. at Somersetshire College, Bath, and at Oxford. He became headmaster of Somersetshire College, 1873, and fellow of New College, Oxford, 1876. He came to London, 1890, joining the *Daily Telegraph* staff. He succeeded Harris as editor of the *Fortnightly Review* in 1894, a post he held till his death. Among his works are *The Metaphysics of John Stuart Mill*, 1879; *Studies in Philosophy*, 1882; *Constructive Ethics*, 1886; *Studies New and Old*, 1888; *Studies at Leisure*, 1892; *The Idea of Tragedy*, 1900; *The Development of Macerlinck*, 1904; *The Feminine Note in Fiction*, 1904; *The Literary Man's Bible*, 1907; and *Rosemary's Letter Book*, 1909. His drama, *Kil Marlowe*, was produced at St James's Theatre in 1893.

Courtney of Penwith, Leonard Henry, first Baron (1832-1918), statesman, b. Penzance, and educ. at St John's College, Cambridge. A pronounced Liberal in politics, C. was under-secretary of state for the Home Dept., 1880-81, for the Colonies, 1881-82. He succeeded Cavendish

as financial secretary to the treasury, resigning office in 1884. He was chairman of committees and deputy speaker 1886-1892. He opposed his party on the Transvaal war question, and retired from the House of Commons in 1900. C. was made a peer in 1906. He stood alone in the House of Lords as an opponent of the prosecution of the war against Germany. He was an early advocate of proportional representation. *See* life by G. P. Gooch, 1926.

Courtois, Jacques (1621-76). Fr. painter, commonly called Le Bourguignon. He studied painting with his father, Jean C., and won his reputation as a battle painter. His scenes of the camp, the march, and the battlefield may be found in most of the prin. galleries of Europe. He entered the Society of Jesus in Florence, taking the habit in Rome (1655), where he lived piously, and where he d.

Courtrai (Flem. Kortrijk), tn in the prov. of W. Flanders, Belgium, 26 m. S.W. of Ghent. The tn is built on both sides of the R. Lys, and is very picturesque with its old walls, its castle, and famous belfry. The Gothic church was founded by Baldwin, count of Flanders, in the early 13th cent., and the tn hall dates from 1526. C. is a busy manufacturing tn, and is celebrated for its table damask, fine linen, and lace. To the Romans, it was known as *Cortracum*, but gained its industrial importance in the Middle Ages. Here in 1302 was fought a 'battle of the Spurs' (not to be confused with Henry VIII's battle at Guinegate, 1513), when the citizens of Ghent, Ypres, and Bruges won a glorious victory over the Fr. Army, calling the battle after the golden spurs they plucked off the vanquished dead. C. was occupied by the Gers. in 1914, and recovered by the Allies in 1918. Again occupied by the Gers. in 1940, but liberated by Brit. troops in 1944. Air-raids in 1943-4 destroyed much of the centre. Pop. (1955) 41,400.

Courts, Ecclesiastical, *see* ECCLESIASTICAL COURTS.

Courts-martial, courts usually convened for the purpose of trying offences against military or naval discipline, and also for administering martial law. Previous to 1640 ordinances were issued by the king for the trial of these offences, and justice was administered under the old court of chivalry of which the earl marshal was the president. The military laws adopted by the commanders during the Thirty Years war, however, were not without their effect on Eng. military law, and we may safely say that C. were instituted in the reign of Charles I. They did not receive parl. sanction, however, until the Mutiny Act of 1689 was passed, and from that date until 1879 C. administered the discipline laid down in the articles of war. In that year the Army Discipline and Regulation Act was passed, and two years later the Army Act (1881) superseded that. C. are divided into three different classes: (1) a dist. court-martial, (2) a general court-martial, (3) a field general court-martial. A dist. court-

martial is convened by a general officer having authority to do so; it must be composed of at least three officers, each of whom has served at least two years, and it can give punishment to the extent allowed by the Army Act. A general court-martial is the only court which has authority to try an officer, or to pass a death sentence, or a sentence involving penal servitude. It must consist of at least five officers. A field general court-martial is convened in war-time when held necessary by the officer in command of troops on active service, and when it is impossible to convene an ordinary general court-martial. The ordinary procedure of a general court-martial must be maintained as far as possible, and the prisoner is allowed to conduct his own defence and to address the court himself. The experiences of the First World War gave an impetus to the humanitarian tendency in the infliction of punishment upon military offenders, and to this tendency may be traced the modification of the power of C., particularly in the abolition soon after the war of the death sentence in certain cases. These cases are leaving one's commanding officer in order to go in search of plunder; sleeping or being drunk when on sentry duty; breaking into a house in search of plunder; forcing or striking a soldier who is acting as a sentinel; and forcing a safeguard. Public opinion also strongly animadverted on certain forms of field punishment, in view of which flogging and the tying of offenders to guns or vehicles have been abolished. Following the recommendations of the committee appointed after the war, improvements were effected in procedure and in the requirements as to the qualifications of officers constituting a court, and regimental C. were abolished, a change justified by the marked diminution of crime in the Brit. Army. Sentences of C. during the First World War were not always put into execution, and the services of offenders were retained in the field by the operation of the Army Suspension of Sentences Act, which, passed in 1915, is still operative. In Oct. 1946, as a sequel to the quashing of the sentences on 243 Brit. paratroopers for mutiny against their living conditions in Malaya, a number of M.P.s demanded that persons sentenced by C. should have the right to appeal to high court judges either through the court of criminal appeal or some special court. The right of appeal was introduced in 1951 by the Courts Martial (Appeals) Act. *See* *Manual of Military Law*, 1956.

The R.A.F. has its own code of law, which is largely based on military law, and, in consequence, its court-martial procedure is analogous to that of the army.

Naval Courts-martial. These courts are held under the authority of the Naval Discipline Act, 1866, which was amended in 1884. From the time of the Stuarts down to the time of the third George, discipline in the navy was regulated only at the discretion of the commanders,

under the authority of the Admiralty. In more cases than not this meant that the law was badly administered, and depended too largely upon the whims and fancies of the commander. Under the Naval Discipline Act, however, the court must consist of from five to nine officers of certain fixed rank. The court also must be held on board one of H.M. ships of war, and there must be at least two such ships together at the time. The sentence, save in the case of the death penalty, does not need confirmation by the commander-in-chief of the station. The court also has the power of reducing the gravity of the charge, and sentencing the prisoner on the reduced charge. The Naval Discipline Act also lays down definitely the jurisdiction of the courts which have by that Act authority to deal with any offender who is for the time being directly or indirectly connected with the navy or naval authorities.

Courts-martial Reforms. A reorganisation of the system of army and air force C. was recommended in the report of the Lewis Committee (pub. as *Cmd* 7608, 1949). The changes recommended include the provision of legal aid before and during trial, the appointment of directors of legal services in the three service ministries, the estab. of a C. appeal court, and a reconstitution of general and dist. C. It was suggested that the judge advocate general (q.v.) should be appointed on the recommendation of the lord chancellor (instead of by the Crown) and be responsible to him. His new title should be chief judge martial and he should enjoy a status and remuneration not less than those of a puisne judge of the high court. In the Lewis Committee's view general C. should be composed of a judge martial or his deputy and five officers of at least the rank of lieutenant or flying officer. Dist. C. should be under a permanent president and restricted in jurisdiction to offences for which the maximum penalty is imprisonment, and to soldiers and airmen below warrant rank. It was also proposed that the field general court-martial should be called an emergency court-martial, and that it should not be held in peace time in the U.K. In special cases, such as sentence of death for treachery, the sentence should not be executed immediately unless the convening officer and the next two senior officers in the force (who did not sit on the court-martial) affirm the conviction and conclude that the interests of discipline so require. The report also made far-reaching proposals in relation to appeal against conviction. Whenever the accused had pleaded not guilty it was proposed that he should have the right of appeal on a question of law. The court of appeal, to be called the C. appeal court, should, it was recommended, be formed of the chief judge martial, the vice-chief judge martial, and the judges martial, with the assistance of queen's counsel from a panel approved by the lord chancellor. It was not proposed that the court should hear appeals against sentence.

Most of these proposals were embodied

in subsequent legislation—the Court Martial (Appeals) Act, 1951, and the Army Act, 1955.

Certain of the above new features proposed by the Lewis Committee already form part of the naval C. system. In regard to others the Admiralty has taken administrative action on similar lines to the War Office and Air Ministry. In particular, as a result of the Pilcher Committee report, the judge advocate of the fleet has since 1951 been appointed by, and is responsible to, the lord chancellor instead of the first sea lord.

Couserans, or Conserans, Le, anct dist. of France, once part of Gascony, now in the dept of Ariège. Its cap. was St-Lizier.

Cousin, Jean, the elder (1490–1560), b. Sens. He began as a glass painter, but is mainly known as the first important Fr. painter of the nude, by his picture 'Eva prima Pandora' (Louvre), in the style of the Fontainebleau school.

Cousin, Jean, the younger (c. 1522–c. 1594), b. Souchy, near Sens, was, like his father Jean C. the elder (q.v.), a picture and glass painter. The windows in the Sainte Chapelle, Vincennes, are considered his best work, other examples being in the church of St Gervais, Paris, and the church of Sens. His 'The Last Judgement' (Louvre), with its multitude of nude figures, helped to establish subject painting in oils in France. C. was also a goldsmith, miniaturist, sculptor, and engraver. He made woodcuts for Jean le Clerc's Bible and also wrote books on geometry and perspective, including, among others, *Livre de Perspective*, 1580, and *Livre de Portraiture*, 1571. See A. Firmin-Didot, *Étude sur Jean Cousin*, 1872.

Cousin, Victor (1792–1867), Fr. philosopher and critic, b. Paris and educ. at the École Normale there. By 1814 he was Royer-Collard's assistant lecturer in philosophy at the Sorbonne. C. was at first a follower of the Scottish psychological ('common-sense') school of Reid and Dugald Stewart; after his visit to Germany, 1817–19, he showed the influence of Kant, Hegel, Fichte, and others. In 1820, after the assassination of the Duc de Berry, C. was for a time deprived of his office because of his Liberalism. During his second visit to Germany, 1824–25, he was arrested at Dresden, suspected of revolutionary tendencies, and detained for some months at Berlin. He returned to France and regained his position, in 1828, under Martignac's ministry. By this time he had pub. his eds. of Proclus and Descartes (1820–26), and the first vols. of his trans. of Plato. C. became director of the École Normale in 1830. He was minister of public instruction in the Cabinet of Thiers in 1840, and a member of l'Académie des Sciences Morales et Politiques. After the revolution of 1848 C. aided the gov. of Cavaignac, publishing an anti-socialistic pamphlet, *Justice et Charité*. He retired from public life after the *coup d'état* of 1851. He was founder of the 'eclectic' system, so named by himself; this system or school derived its doctrines partly from Scottish philosophy

and partly from Ger. Among his prin. works are *Fragments philosophiques* (1826; new eds. 1847, 1848); *Cours d'histoire de la philosophie* (1826; new eds. 1840, 1863); *Du vrai, du beau et du bien* (1836; new ed. 1853); *Galerie des femmes illustres du 17ème siècle* (1844); *J. Pascal* (1844); *La Jeunesse de Mme de Longueville* (1853); and *Mme de Sablé* (1854). See C. Secretan, *La Philosophie de Victor Cousin*, 1868; J. Simon, *Victor Cousin*, 1887.

Cousin (Lat. *consobrinus*), kinsman (like the Lat. *consanguineus*, a blood relation), especially applied to the child of one's uncle or aunt. If A and B are C.s, A's child is a first C. once removed to B. The children of brothers or sisters are C.-german (full or first C.s). Children of C.-german are second C.s to each other. In some parts of Cornwall and Somerset C. merely means friend or comrade (cf. Scottish friend, meaning kinsman). European sovereigns used to call each other C. or coz (see Shakespeare's *Henry V*). This name is still used by sovereigns for their nobles.

Cousin-Montauban, Charles Guillaume Marie Apollinaire Antoine, Comte de Palikao (1796-1878), Fr. general. He commanded the Anglo-Fr. forces in the expedition against China, winning the victory of Palikao in 1860. For this Napoleon III granted him his title after the fall of Peking. He was premier and war minister from Aug. to Sept. 1870, at the beginning of the Franco-Ger. war. After the disastrous battle of Sedan he fled from the country, refusing the dictatorship offered him. C.-M. wrote *Un Ministère de vingt-quatre jours* (1871) describing his experiences.

Cousins, Samuel (1801-87), mezzotint engraver, apprenticed to S. W. Reynolds. He produced his 'Lady Acland and Children' and 'Master Lambton' after Lawrence in 1826. These engravings won him a reputation, and were followed by numerous plates after Lawrence, Landseer, Reynolds, Millais, and others. 'Marie Antoinette in the Temple' is another famous work. C. became A.R.A. in 1835, and first academician engraver in 1855, retiring in 1880. He left £15,000 to found academy annuities for poor artists. See Pycroft's *Memoir*, 1887.

Coustou, name of three Fr. sculptors: **Nicolas Coustou** (1658-1733), Fr. sculptor, b. Lyons. His chief works are a statue in marble of Louis XV (in the Louvre), 'Daphne pursued by Apollo' (in the garden of the Tuileries), and the 'Descent from the Cross,' commonly known as 'Le Vœu de Louis XIII' (in the choir of Notre-Dame).

Guillaume Coustou (1678-1746), brother of Nicolas, and with him a pupil of his uncle, Antoine Coysevox (q.v.). He entered the academy of Paris in 1704 with 'Hercule sur le Bûcher.' He executed the bas-reliefs of the chief entrance to the Hôtel des Invalides, and the statues of the façade of the Château d'Eau, opposite the Palais Royal. Other works of his are a statue of St Augustine, 'Faith and Religion,' and 'Jesus Christ in the Temple.'

Guillaume Coustou (1716-77), son of the above, b. Paris. He won the Prix de Rome at the age of 19. He designed the sculptures formerly in front of the church of St Geneviève, and executed in bronze 'The Visitation.'

Coutances, Fr. tn in the dept of La Manche, 5 m. from the Eng. Channel, standing on the site of the Rom. Constan-tia. It is the seat of a bishopric, and is built on the slope of a hill surmounted by a beautiful 13th cent. Gothic cathedral. In the 17th cent. C. was the centre of a revolt against the imposition of the salt-tax. It has an agric. market and textile manufs. Pop. 5500.

Couthon, Georges (1755-94), Fr. revolutionary, a lawyer, who became president of the Clermont tribunal in 1789. He voted for the death of Louis XVI. Gradually he became more and more



GEORGES COUTHON

radical, and sided against the Girondists. Eventually he became president of the committee of public safety. He helped Robespierre to destroy the partisans of Hébert and Danton, but was guillotined with his leader in 1794.

Coutras, Fr. tn in the dept of Gironde, on the Dronne. Henry of Navarre (see HENRY IV of France) defeated the League (q.v.) here in 1587. It has a trade in wine and flour. Pop. 3800.

Coutts, Baroness Angela Georgina Burdett-, see BURDETT-COUTTS.

Coutts, Thomas (1735-1822), famous London banker, of Scottish birth, founder of the bank house, Coutts & Co., of which he became solo manager on the death of his brother James in 1778. He became banker to George III, and left a fortune of £900,000. C. married twice, his second wife being the actress Harriet Mellon. His grandchild was Lady Angela Burdett-C.

(d. 1906). See R. Richardson, *Coutts & Co.*, 1906; and R. Chambers, *Biographical Dictionary of Eminent Scotsmen*, 1875.

Couvade (Fr. *couver*, to hatch), the custom prevalent among sev. peoples in different parts of the world, requiring that the father at, and sometimes before, the birth of a child shall retire to bed and fast from all animal food. The mother continues her work in the fields until a few hours before the birth, and returns to it as soon after as she can stand, while the father affects to suffer all the physical pains and is waited on hand and foot by the women. The custom existed in ancient times among the Corsicans (recorded by Diodorus) and among the Sp. Basques (recorded by Strabo). It is still found in Guiana, in Tibet, and in some parts of China and India. See W. R. Dawson, *The Custom of Couvade*, 1929.

Covadonga, see CANÇAS DE ONÍS.

Cove, see COBB.

Cove, in architecture, a concave surface at the junction of wall and ceiling; used in place of a cornice.

Covenant, in law, is a written agreement under seal (i.e. in a deed) between two or more persons whereby some act is agreed to be done or not to be done; or upon the happening of some event, some liability is agreed to be borne by some party thereto. C.s may be express, e.g. not to use a house for any other purpose than as a dwelling-house; or implied, e.g. in a conveyance on sale the words 'as beneficial owner' imply C.s that the vendor of the land has a right to convey, that the land is free from encumbrances, that the purchaser shall be left in quiet enjoyment of the land, and that the vendor will make any further deed for the conveyance of the land that may prove necessary. C.s are said to 'run with the land' when they bind anyone to whom the land in respect of which they have been entered into is assigned. A breach of C. gives rise to an action of damages, and in some cases the covenantee may sue for an injunction to restrain a threatened or intended breach.

Covenant (through O.F. from Lat. *convenire*), or **Testament**, mutual agreement made by two persons or groups of persons, or by a person or persons with their god or gods. The term (Heb. *bērit*) is much used in the O.T. for various kinds of agreement. The children of Israel were particularly forbidden to make any C. with the Canaanites. More important, however, than these are the C.s made between Yahweh (Jehovah) and His chosen people. All these were summed up in the C. made with Moses on Sinai, spoken of in Isa. lv. 3 as 'the everlasting covenant.' This C. was expressly conditional. Israel had to be faithful and obedient if the C. was to be fulfilled. Human weakness and temptation made Israel unfaithful to the Mosaic C., but in Jer. xxxi a new C. written in man's heart was promised. This was fulfilled by Jesus Christ, the author of a New C. ratified in his own blood. This rests on faith, and is expounded by St Paul and the writer of the epistle to the Hebrews as the ful-

filment of the original C. made with Abraham. See Schultz, *Old Testament Theology*, vol. II, 1892.

Covenant of the League of Nations, short statement of essentials to the formation of the League of Nations, incorporated in the treaty of Versailles, 1919. It contained 26 clauses, and might be regarded as the constitution of the League. Its primary purpose was the prevention of war, and of necessity it envisaged the League as an organic body capable of seeing to its own development, and did not therefore do more than provide in general language such tentative machinery for securing international peace as at the date of the treaty was likely to command mutual agreement among the signatories of the treaty. There was no outlawry of war as such in the C., and the obligations laid on the signatories in the matter of the prevention of war were definitely limited in scope. These obligations were imposed by Articles 12, 13, 15, and 16. Under Article 12 the members of the League agreed to submit disputes either to arbitration or to inquiry by the League council, and, in any case, not to resort to war until three months after the award by the arbitrators or the report by the council. This article contained no absolute prohibition of war; it merely made provision for an interim period during which other means than resort to war might be employed towards finding a settlement. In the event of one disputant being dissatisfied with the award of the arbitrators and declaring war on the other disputant, who might faithfully have observed the award, a purely negative obligation was imposed by Article 13 on all members of the League other than the recalcitrant disputant, viz. that they would not resort to war against the complying disputant. In the case of a dispute submitted in the first instance, not to arbitration, but to inquiry by the council, it was provided by Article 15 that the members would not go to war with any other party to the dispute which complied with the recommendations of the council's report. But if the report was not unanimous, no obligation whatever was imposed on League members, who 'reserve to themselves the right to take such action as they shall consider necessary for the maintenance of right and justice.' Again, if a disputant failed to wait the stipulated time until the machinery set up by the League for seeking a solution other than war had been put into operation, then, under Article 16, the recalcitrant member was deemed to have committed an act of war against all other League members, and two sanctions, the one economic, the other military, naval, or aerial, might come into operation. In many cases the mere threat of an economic blockade would be effective, as was shown by the sudden cessation of the invasion of Albania by Yugoslavia in 1921. But, indeed, the threat was inadequate on the face of it because the C. provided no clue to the questions as to who was to say when the military sanction should operate, or who was to decide its nature and direct its application against

the common enemy. The C. imposed no compulsory contribution of military, naval, or air forces, and the duty of the council was solely one of recommendation, for there was no definitely organised force at the disposal of the League council. These defects of Article 16 of the C. were discussed at the 1921 assembly of the League, with the result that its text was altered by resolution so as to speed up the operation of sanctions in a crisis. This amendment was never ratified by the requisite number of members, and could not therefore be included in the official text of the C.

It did not follow from the restricted character of these obligations that the prin. articles of the C. were always valueless. On the contrary, they were sometimes instrumental in averting war, as, for example, in the case of the Greco-Bulgarian frontier dispute of 1925. No really grave dispute between two great nations was ever averted by the C., however, and when such disputes threatened to assume a serious aspect, one or other of the disputants adopted the course of resigning its League membership and reserved its entire freedom of action. Even small nations were undeterred by the League. Thus, in the prolonged dispute between Paraguay and Bolivia over the Gran Chaco, the C. machinery failed of its purpose. Again, the League failed to check Italy in the Corfu incident of 1923, and during the ensuing years it became evident that when a totalitarian state regarded its vital interests as being affected in a dispute it declined to tolerate League interference. In 1932 the C. machinery was strained to breaking-point when Japan invaded Manchuria, and again in 1935-36, in the Italo-Ethiopian war. It was attempted to explain away the former of these failures by assuming that there existed no reliable central gov. in China, and that Japan had really confronted the League with a *chose jugée*. The ensuing Lytton report plausibly stressed the interests of Japan and, to some extent, this emphasis reflected that by no means negligible section of world opinion which applauded Japan's adventure as calculated to restore order and good gov. in China. The report, however, did not even placate Japan and, in face of her condemnation as an aggressor by the League, she resigned her membership in order to pursue, thenceforward, her own course in China. When the clouds began to darken the Italo-Ethiopian political horizon, strenuous efforts were made to avert the threatened It. invasion of Ethiopia by action under Article 15, while the League council also strove to appease Italy by formulating a comprehensive programme of reforms in Ethiopia under a guarantee of collective assistance from Great Britain and France; and when this programme was rejected the League applied economic sanctions, only to abandon them soon afterwards as ineffective. No attempt was made to invoke the machinery of the C. in the case of the invasion of Austria, Czechoslovakia, and Poland by Hitler, and thereafter the

European political situation developed as if there were no League in existence.

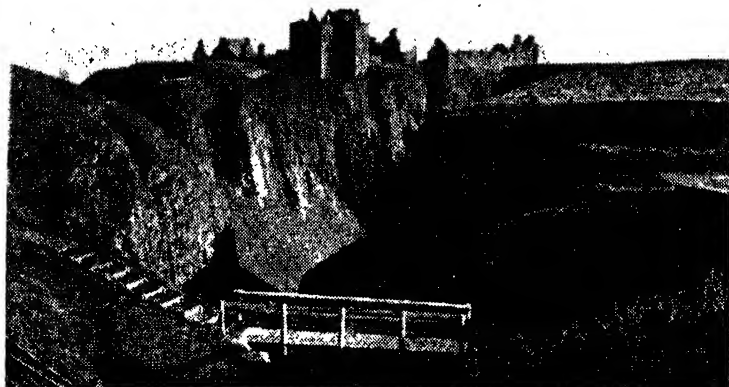
It may be noted that Article 8 of the C. reflected the recognition by members of the necessity for reducing national armaments 'to the lowest point consistent with national safety,' and entrusted the council with the duty of making plans for the reduction of armaments and the supervision of munitions factories. That, however, was as far as the framers of the C. went in the sphere of disarmament (q.v.). Brief reference may also be made to Article 10, which stated that the members undertook to 'respect and preserve, as against external aggression, the territorial integrity and existing political independence of all members'; and that 'in case of any aggression or threat of aggression,' the council 'shall advise upon the means by which the obligation shall be fulfilled.' This article, however, was so ambiguous, when read in conjunction with the rest of the C., that it was almost meaningless; and indeed it was against this particular article that much of the opposition to the C. in the U.S.A. was directed. The two cardinal objections by the U.S.A. were that the article might involve the U.S.A. continually in purely European disputes over frontier adjustments, and that its natural interpretation was to perpetuate for all time the territorial *status quo*. Finally mention may be made of Article 14, which contained provision for instituting a Permanent Court of International Justice; but the court was not estab. until 1921 (*see* INTERNATIONAL COURT OF JUSTICE; OPTIONAL CLAUSE).

In 1938 at the nineteenth session of the League assembly the question of revision of the C. was raised again; but further consideration of the question of League reform was indefinitely postponed by the growing tension in Europe leading to war in the succeeding year.

The C. has been described by Dr Gilbert Murray as a 'call to repentance.' It rang with a moral tone; it called for the renunciation of war, for justice, and for 'a scrupulous respect for all treaty obligations'; it declared that any war or threat of war, whosoever it might occur, was 'a matter of concern to the whole League.' Perhaps it was because these aspirations came to nothing that the Dumbarton Oaks conference (Aug.-Oct. 1944) produced a plan that invoked no principles, but contained practical arrangements for restraining an aggressor. Under the League C. a dispute likely to lead to war could be brought before either the assembly or the council, although it was the council which had to call for action (sanctions) if forcible restraint was to be used. According to the Dumbarton Oaks plan, the council (called, for this reason, the security council) would alone shoulder the burden of keeping the peace; and for this purpose it would be aided by a military staff committee consisting of the chiefs of staff of the great powers (or their representatives). Moreover, in order that an aggressor state might be immediately restrained, all member-states

of the United Nations Organisation would have entered into agreements with the security council to determine their quota of military assistance for collective operations. There would therefore be an international force which could, in whole or part, be mobilised at the security council's command, if the interruption of diplomatic and trade relations, for which the council would first call, proved ineffective. These powers, vested in the security council, were much more precise and formidable than the powers of request for sanctions allowed to the council of the League. See also UNITED NATIONS, CHARTER; SAN FRANCISCO CONFERENCE.

followed, lasting for years. In 1679 the C. rose again, and won a small victory at Drumclog, but were completely crushed three weeks later at Bothwell Bridge, and in the next few years the remaining C. were persecuted with great cruelty, suffering imprisonment in appalling conditions. After their ultimate release some took the Oath of Allegiance, but others, refusing, were sent to the plantations in America. The struggle was at last ended by the revolution of 1688. Scott's *Old Mortality* gives a vivid account of the insurrection of 1679. See J. Aikman, *Covenanters in Scotland*, 1848; A. Smellie, *Men of the Covenant*, 1904; J. King Hewison, *The Covenanters*, 1908;



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DUNOTTAR CASTLE IN KINCARDINESHIRE, WHERE COVENANTERS WERE IMPRISONED

Covenanters, name given to all subscribers to the various undertakings entered into by members of the Reformed Church in Scotland, from 1557 onward, for the defence of their faith; especially associated with the signatories of the Solemn League and Covenant (see also COVENANTS, THE), 1638-48. The Scottish Presbyterians co-operated with the Eng. Puritans in putting down episcopacy, and were in their turn crushed by Cromwell and the Independents. Charles II, needing Scottish support, signed the covenant in 1650, and again in 1651, but after the Restoration denounced it as unlawful (1662). The nobles mostly yielded, but thousands of the Scottish people stood firmly by their principles and attempted resistance. The battle of Rullion Green (1666) dispersed the insurgent army, and fearful persecutions

and R. C. Bosanquet, *Cavaliers and Covenanters*, 1932.

Covenants, The, in Scottish hist., certain public religious bonds entered into by the whole Scottish nation. They were two in number, the National Covenant and the Solemn League and Covenant, but they were preceded by sev. earlier religious bonds entered into by leading reformers and statesmen at the beginning of the Reformation period. The National Covenant is also known as the Short Confession of Faith to distinguish it from the more elaborate exposition set forth by Parliament in 1560. It was drawn up at the command of James VI by John Craig, one of his chaplains, its aim being to maintain the Protestant faith with the Presbyterian organisation, and to resist the attempts being made by the papal see to regain its hold upon Scotland. It gives a short

account of the faith which is to be supported, and then contains an oath of allegiance to the king in support of the same. The National Covenant was subscribed by all ranks of society in 1581, on the order of the king, Privy Council, and general assembly. It was renewed in 1590, after the defeat of the Armada, and again in 1598. It was once more brought into use in 1638, to unite the people in resistance to the attempt of Charles I to impose episcopal organisation and a prayer-book on the Eng. model upon the Scottish people. In Greyfriars churchyard at Edinburgh the covenant was signed by multitudes, and copies were then sent throughout the country. Many are still extant, a notable copy, bearing the names of many distinguished men, being in the library of the Faculty of Advocates at Edinburgh. The Solemn League and Covenant was a treaty between the Eng. and Scottish nations by which the Eng. Parliament received help from the Scots against Charles I on conditions given therein. The covenant was signed in England by the Parliament, the Assembly of Divines, and all classes, and it was also universally signed in Scotland. The Protestants of Ireland also subscribed to it. Its aim was to preserve and propagate the reformed faith by securing uniformity of doctrine, worship, discipline, and government throughout the three countries, and thus uniformity was generally understood to signify uniformity on the Presbyterian model. The National Covenant was renewed by Parliament in 1640, the Solemn League and Covenant in 1648, and both were subscribed by Charles II at Speymouth in 1650 and at Scone in the following year. After the Restoration both C. were declared unlawful (1662) and later treasonable (1685). See W. L. Mathieson, *Politics and Religion in Scotland, 1550-1695*, 1902, and A. Mure Mackenzie, *Passing of the Stuarts*, 1937.

Covent Garden, square in London situated N. of the Strand, deriving its name from the Convent Garden on this site that belonged to the Abbey of Westminster. The land was granted by the Crown to John Russell, 1st Earl of Bedford, in 1552. For the fourth earl Inigo Jones laid out the square (1631) followed by the erection of the church of St Paul's on the W. side. The church, twice destroyed by fire and twice reconstructed, has the curious feature of a portico at its E. end. Of the piazzas or open arcades of Inigo Jones' square only a fragment on the N. side survives. C. G. became a fashionable residential area until about the mid 18th cent. The centre was used as a mkt when the square was first laid out, but the present buildings were not erected until 1831, and C. G. has become London's chief vegetable, fruit, and flower mkt. The mkt. one of London's sights, is busiest between 6 and 9 a.m. The mkt rights were sold by the 11th Duke of Bedford in 1913.

Covent Garden Theatre and Royal Opera House. This famous London theatre (opposite Old Bow Street police court),

now the home of grand opera, was first built in 1732 by the harlequin Rich. At its opening Quin was the leading actor. The present building is virtually the fourth on the same site, as the alterations in 1792 amounted to a new theatre. It was burnt down in 1808 and rebuilt by Smirke. The increased prices of admission to cover the costs led to the 'old price riots' of 1809. In 1847 it was called the Royal Italian Opera House. Another fire in 1856 resulted in the present building by Barry, opened in 1858, seating about 2000. The interior is almost semicircular, the stage 90 ft deep by 50 ft high. A noticeable feature outside is the Corinthian portico of six columns, with the statues and reliefs by Flaxman and Rossi (saved from the former buildings) ranged on either side. Garrick played at C. G. in 1746, joining Rich for the season of 1747. C. G. and Drury Lane (first opened 1663) Theatres have always been rivals. In 1750-1 *Romeo and Juliet* was produced in rivalry at both houses alike. Peg Woffington performed at C. G. from 1740 to 1757. By 1803 John Kemble was part-proprietor and stage-manager. At this time Mrs Siddons was the leading actress. She retired in 1812, after playing *Lady Macbeth*. In 1817 John Kemble retired in favour of his brother Charles. The theatre then drifted for a time into great difficulties, and in 1829 was in possession of the bailiffs. Laporte of Her Majesty's and Bunn of Drury Lane were managers, 1832-5. Osbaldestone followed, presenting the tragic actress, Helen Faucit, in 1836. Macready, Mathews, and Miss Vestris leased the theatre later. From 1842 to 1859 Jullien's promenade concerts were often held here. The house was opened for opera, 1848, with F. Gye as manager. This venture proved successful, and Gye introduced Gounod and Wagner to London, amongst other composers. Grist, Mario, and Viardot were all noted singers of this period. From 1888 to 1896 Augustus Harris took over the management. He devoted his efforts to raising the standard of the whole cast, and not relying solely on the prima donna. After his death a company took over the management. C. G. was leased to the Anti-Corn Law League for its meetings and bazaar, 1843-5.

In 1896 Neil Forsyth became secretary of the Royal Opera Syndicate, and for many years acted as general manager and held auditions. In 1930, the secretaryship of the C. G. Syndicate Ltd, was vested in S. C. Edgar. Some of the famous singers heard in C. G. were Patti, Alboni, Albani, Tetrazzini, and Sammarco. In more recent times the Russian singer Shaliapin charmed opera-lovers, and a few of the newer stars of the musical world to appear at C. G. were Florence Austral, Lotte Lehmann, Elisabeth Schumann, Rosa Ponsello, Rudolf Bockelmann, Friedrich Schorr, Richard Mayr; and Eva Turner and Walter Widdon, two gifted Eng. operatic singers. Bruno Walter was the conductor of the Strauss and Wagner operas at C. G. in more recent years. Sir

Thomas Beecham mooted a scheme for an Imperial League of Opera, but the inadequate public response, and the absence of guaranteed support over any considerable period, proved so serious a handicap to the development of grand opera in Great Britain that, until an arrangement was made at the end of 1930 between the C. G. Opera Syndicate and the B.B.C., it seemed improbable that the C. G. seasons would be continued, otherwise than in a limited sense, beyond 1932. The arrangement with the B.B.C., however, provided for production over a number of years, the undertaking being administered by a new company known as the C. G. Opera Syndicate (1930) Ltd.

In 1946 began a new phase of opera in English, with C. G. now, for the first time, an estab. organisation subsidised in part by the Arts Council of Great Britain. An element of the international summer seasons remains, but opera in the vernacular is the rule, though foreign artists who can sing in English are often engaged. Brit. artists are enlisted wherever they can be found, and the highest standards are aimed at, if not always attained as yet, except in the matter of stage design, in which C. G. is supreme. The Royal (formerly the Sadler's Wells) Ballet is also estab. at C. G. and holds notable seasons of its own as well as taking part in operas.

See D. Shawe-Taylor, *Covent Garden*, 1948.

Coventry, Countess of, see GUNNING.

Coventry, Sir John (d. 1689), politician. He was M.P. for Evesham in the Long Parliament (1640), fought as a Royalist, and was knighted in 1661. In 1667 he was elected M.P. for Weymouth, and during a debate on playhouses in 1670 asked whether the king's pleasure lay among the men or the women who acted, popularly supposed to be an allusion to Nell Gwynn. His mutilation by Sir T. Sandys and a band of ruffians in consequence of this remark led to the passing of the Coventry Act which made such mutilation a capital offence.

Coventry, parl. and co. bor. in Warwickshire, England, on the R. Sherbourne, 9½ m. from Warwick, 18 m. SE. from Birmingham, 10 m. N. from Leamington, and 18 m. NE. from Stratford-on-Avon. It possesses a station on the main line from Birmingham to London (94 m.), with a branch to Nuneaton and another to Leamington. It also has the advantage of a canal, and this waterway has connection with the Oxford and Trent and Mersey canals. In 1936 a municipal aerodrome was estab. The city returns three members to Parliament.

C., anciently *Coventre*, and in Domesday *Coventreu*, is conjectured by Dugdale from the termination '-tre,' a place or dwelling, to have been a Brit. settlement. In 1451 it was constituted by Henry VI a co. of itself, and this privilege continued until 1842; under the provisions of the Local Government Act, 1888, the distinction was revived, and the place declared a co. bor. A convent appears to have been founded here at an early period, of which

at one time St Osburg was abbess. It was destroyed in 1016, when Edric invaded Mercia. At a later period, in the time of the Confessor, Leofric, earl of Mercia, and his countess, Godiva, erected and munificently endowed a monastery on the same site for an abbot and 24 monks of the Benedictine order. The first extant record of the famous legend of Godiva and her ride through the city appears about 150 years after the death of Leofric, which occurred in 1057. The city has long maintained a reputation as a manufacturing centre. Before the 15th cent. C. had estab. itself as the midland centre of the cloth industry. In the late 15th and the 16th cents. the making of caps and bonnets was extensively carried on. The place was then famous for a particular kind of blue dye, whence came the saying 'true as Coventry blue.' From the 17th cent. the manuf. of clocks and watches and of silk ribbons was developed, and they became the main industries of the 18th and 19th cents., followed in the late 19th cent. and early 20th cent. by the manuf. of bicycles. The staple trades now are motor cycles, motor cars, aero-engines, aircraft, machine tools, tractors, gauges, and instruments, general allied engineering, rayon, textile smallwares, telecommunications, radio and television sets, electrical equipment and plastics.

The cathedral church of St Michael, which possessed perhaps the deepest place in the affections of the people, was entirely destroyed, with the exception of the beautiful spire, by the enemy raid of 14 Nov. 1940. It was an edifice of surpassing beauty and dignity. The spire, a magnificent specimen of perpendicular architecture, resting on an octagonal tower, rises to a height of 300 ft. and forms a conspicuous feature of the city. The Great Hall of St Mary's Hall was built by the Trinity Guild at the turn of the 14th and 15th cents. The roof was damaged in the Second World War, but has now been restored. Ford's Hospital, founded in 1509, and rightly considered one of England's finest specimens of Tudor architecture, was destroyed by enemy action, but has now also been restored. Bond's Hospital provides further testimony to the generosity of C.'s wealthy merchant citizens of a bygone age. This almshouse was founded in 1506, and though the place was damaged in the raids it has now been restored. The origin of Holy Trinity Church is lost, but sufficient records exist to show its great antiquity and the interesting fact that it was attached to the monastic estab., Dugdale mentioning its appropriation to the priory in 1259. The steeple of Christ Church, notable as being one of the striking architectural group forming the celebrated Three Spires, was the sole remaining portion of a former Franciscan monastery, and it was the only part of the modern church which survived the enemy air attack of 10 April 1941. In the very heart of medieval C., breathing the spirit of the past, was the anct Palace Yard, a quaint quadrangle of half-timbered buildings, once the home of the

Hopkins family, to whose memory a marble monument appeared in the cathedral. Originally there were 12 city gateways, but the only two remaining relics of the medieval city defences now to be seen are the Swanswell or Priory Gate in Hales Street, and Cook Street Gate in Cook Street. Both these have been restored, and are now in an excellent state of preservation. Fragments of the old city walls still remain near Cook Street Gate, and here a beautiful little garden, known as Lady Herbert's Garden, has been laid out by Sir Alfred Herbert, K.B.E. Almshouses are also on the site, the gift of the same donor; some were destroyed by enemy action but have now

The commercial buildings have been grouped together, and the central feature of the shopping layout is a pedestrian precinct, at the four corners of which are large new stores, and flanking which are linking blocks which provide shopping facilities off a first-floor terrace as well as shops on the ground floor. The cultural buildings are grouped in a civic area away from the main commercial centre. C.'s new cathedral, designed by Mr Basil Spence, is under construction; consecration services and celebrations are planned for 1961. Pop. 265,000.

Cover: 1. In finance, a term used in reference to a method of speculating in shares by which it is possible to limit one's



'The Coventry Standard'

BROADGATE, COVENTRY, THE CENTRE OF THE CITY

The entrance to the shopping precinct, for pedestrians only, can be seen behind the stationary bus to the right centre.

been rebuilt. The C. and Warwickshire Hospital, founded in 1838, was first estab. in a small house in Little Park Street. In 1867 a new hospital was opened in Stoney Stanton Road, and enlarged from time to time over a period of years. In the course of concentrated attacks on the city the hospital was almost totally destroyed, the only part remaining being the out-patients' dept and the nurses' home. Some rebuilding has since taken place.

The city centre of C. sustained a great deal of war damage, and a plan for rebuilding the city centre has been prepared and is now being carried out. This plan provides wide new roads and all the facilities required for the commercial, cultural, and civic life of a great city.

loss to a specified amount, viz. the amount deposited to cover the sum the speculator is willing to risk in the deal. The amount deposited is called the C. If by settling day the difference in the price of the shares is such that the C. is exhausted, or has 'run off', a further sum must be deposited with the broker, if the speculator desires to carry over. If not, the account is closed. Where a transaction of this nature is entered into with a broker it is normally allowable by the rules of the Stock Exchange, and would not, without other evidence, be regarded in a court of law as a mere speculation in differences (q.v.). If the contract were made directly with a jobber it would be contrary to the gaming Acts. Such transactions are common with outside

brokers, who are really jobbers, and whose businesses go by the colloquial name of bucket shops.

2. Term used as a synonym for the security given for a loan, e.g. debentures, stock bonds, or title deeds, deposited with a banker as security for an overdraft. Insurance companies often issue a 'cover note' pending preparation of a policy for the risk insured.

Coverdale, Miles (1488-1568), Bishop of Exeter, translator of the Bible. He was a native of Yorkshire and was educ. in the house of the Augustine friars at Cambridge. He was ordained at Norwich in 1514, and the same year became an Augustine friar. But by 1526 he had entirely changed his religious opinions; he left his convent and preached against confession, and likened the veneration of images in churches to idolatry. In 1532 he travelled on the Continent, and possibly assisted Tyndale in his trans. of the Bible. In 1535 his own trans. 'out of Douche and Latyn' appeared, with a dedication to Henry VIII—the first complete Bible printed in Eng. The Psalms of C.'s Bible are those used in the Book of Common Prayer. In 1538 C. superintended the printing of a trans. in Paris. Many of the copies were seized by the Inquisition, but a few reached England, which enabled the noted printers, Grafton and Whitchurch, to bring out the Great Bible in 1539. C. became Bishop of Exeter in 1551. During Mary's reign he sought refuge on the Continent, where he took part in the production of the Geneva trans. (1557 and 1560). C. returned from exile in 1559, but, owing to the principles he had derived from continental reformers, he was not restored to the see of Exeter. In 1564 he accepted the rectory of St Magnus, London, but resigned two years later. C. wrote many tracts in order to promote the doctrines of the Reformation, and trans. works of his friends on the Continent. A complete ed. of his works and letters was issued by the Parker Society in 1844-6. *See The Memorials of Miles Coverdale*, 1838; and F. Fry, *The Bible by Coverdale*, 1867.

Covered Way, term used to describe a passage constructed in fortification outside the ditch of a fortress. It is usually about 11 yds wide, and being between the counterscarp and the glacis, and protected by the latter as well as by traverses, is used as a safe position for sentries and for the movements of small bodies of men towards assembling places.

Coverley, Sir Roger de, *see* ROBERT.

Coverture, in law, is a term used to indicate the state of a married woman, who is considered as under *cover* or the power of her husband, and therefore called a *feme covert*. The condition of C. followed from the legal maxim that by marriage husband and wife became one person, and that the legal existence of the woman was incorporated into that of her husband. Since the passing of the Married Women's Property Act in 1882 the maxim above alluded to was bereft of practically all its force, and a married woman can now make contracts and deal with her property

as she chooses. For recent legislation *see* HUSBAND AND WIFE.

Covilhã, tn. of Portugal, in Castelo Branco dist., 34 m. N. of Castelo Branco (q.v.). It is on the SE. slopes of the Serra da Estrêla, has an important woollen industry, and is a tourist centre. Pop. 19,200.

Covington, city of Kentucky, U.S.A., on the Ohio R. opposite Cincinnati, to which it is connected by bridges. It is an important industrial centre, and the second largest city in the state. It has tobacco and meat-packing plants, foundries, breweries, and distilleries; it manufs. X-ray equipment, machine tools, wire goods, metal, paper, and wood products, electrical equipment, bricks, tiles, asphalt, hardware, and fertiliser. C. is the seat of the Northern Kentucky State Vocational School, the Villa Madonna, and several private colleges. It was the boyhood home of Dan Carter Beard.

Cow, *see* CATTLE; DAIRY FARMING.

Cow Parsley, or *Anthriscus sylvestris*, umbelliferous plant, often called keck.

Cow-wheat, or *Melampyrum*, genus of the family Scrophulariaceae, consists of ann. herbs, said to be good for cattle. There are sev. species. *M. arvense*, Field C., is rare in cornfields of S. England; *M. cristatum*, Crested C., and *M. sylvaticum*, Wood C., are local; *M. pratense* is the Common C.

Cowal, mountainous peninsular dist. of Argyll, Scotland, between Loch Fyne on the W. and Loch Long and the firth of Clyde on the E. Its NE. half is a National Forest Park.

Coward, Noel Pierce (1899-), actor, dramatist, composer, b. Tedington on the Thames. He came of a musical family, and when at the Chapel Royal School, Clapham, developed a fine singing voice. He got his dramatic training at the Italia Conti Academy. One of his earliest stage appearances was as a page-boy in Charles Hawtrey's company, and in 1913 he played Slightly in Barrie's *Peter Pan*. During the First World War he enlisted in the Artists' Rifles, but was discharged for health reasons. Taking to play-writing he achieved his first success with *The Forger* in 1923. This was followed by *Fallen Angels*, 1925; *Hay Fever*, 1925; a sophisticated comedy, *Easy Virtue*, 1926; *The Queen Was in the Parlour*, 1926; *Private Lives*, 1930; *Design for Living*, 1933; *Blithe Spirit*, 1941; *This Happy Breed*, 1943; *Relative Values*, 1951; *Quadrille*, 1952; *South Sea Bubble*, 1956; and *Nude with Violin*, 1956. *Cavalcade*, 1931, a story of 30 years in the life of a family, initiated a new type of drama. C. also composed the revues *On with the Dance*, 1925, and *Sigh No More*, 1943, and sev. tuneful operettas, including *Bitter Sweet*, 1929, which was highly successful in both London and New York; others were *Conversation Piece*, 1934, *Pacific 1860*, 1946, and *After the Ball*, 1954. Besides writing the words and music he produced most of his plays, as well as acting in some of them. *Present Indicative*, 1937, and *Future Indefinite*, 1954, are

autobiographies. See P. Braybrooke, *The Amazing Mr Noel Coward*, 1933.

Cowasjee, Sir Jehanghir Ready-money (1812-78), called the Peabody of Bombay, a Parsee merchant and philanthropist. At the age of 15 he became warehouse clerk to the firm of Duncan, Gibb & Co. of Bombay. In 1846 he began trading on his own account, and soon amassed a large fortune, of which he gave away huge sums to philanthropic institutions in Bombay. He was made C.S.I. in 1871, and created a Knight Bachelor of the United Kingdom in 1872.

Cowbane, *Cicuta virosa*, a poisonous, umbelliferous, erect perennial, that grows on wet ground, locally, in Brit. Is.

Cowbridge, bor. of Glamorgan, Wales, 12 m. W. of Cardiff. Portions of the old Norman fortifications and wall still remain. The industry is entirely agric., and the tn has good markets and cattle fairs. Pop. 1100.

Cowdenbeath, tn of Fifeshire, Scotland, 5 m. N.E. of Dunfermline, with a coal-mining industry. Pop. 13,153.

Cowdray, Westman Dickinson Pearson, first Viscount (1856-1927), engineer and air minister. Head of a firm of engineers and contractors. Constructed the Dover harbour works, the Blackwall Tunnel, and the tunnel under the East R., New York. Was also engaged on the Tehuantepec Railway, Mexico. Appointed chairman of the Air Board in Jan. 1917. His great experience was invaluable in the board's work of constructing and delivering aeroplanes. Lord rector of Aberdeen Univ., 1918-21. See J. A. Spender, *Westman Pearson, First Viscount Cowdray, 1856-1927*, 1930.

Cowell, Edward Byles (1826-1903), Sanskrit scholar, who, in 1856, was appointed prof. of hist. and political economy in the re-formed Presidency College, Calcutta, and in 1858 principal of the Sanskrit College, also at Calcutta. In 1867 he was appointed prof. of the newly founded chair of Sanskrit at Cambridge, where he spent the remainder of his life. He taught Sanskrit and Pali, Indian philosophy, Persian, and Zend. He pub. numerous works (on Hindu drama and philosophy, on Persian poetry, on Prakrit grammar, etc.) as well as trans. of Sanskrit works. His linguistic versatility (including Hebrew, Welsh, Spanish) and his knowledge of literatures were remarkable. See G. Cowell, *Life and Letters of Edward Byles Cowell*, 1904.

Cowen, Sir Frederick (1852-1935), conductor and composer, b. Kingston, Jamaica. He studied under Benedict and Goss, and at Leipzig and Berlin, and his works include oratorios, operas, symphonies, cantatas, overtures, and the settings of over 200 songs. He was appointed conductor to the Philharmonic Society in 1888, and held many other important appointments as conductor.

Cowes, seaport and watering place on the estuary of the R. Medina, on the N. coast of the Isle of Wight, England, 10½ m. S.E. of Southampton and 8½ m. S.W. of Portsmouth. It is a world-famous yachting centre and is the H.Q. of the Royal

Yacht Squadron. Other clubs are the Royal Corinthian Yacht Club and the Royal London Yacht Club, and there are sev. sailing clubs. It is the most highly industrialised part of the Isle of Wight, with ship and boat building, aircraft manuf., sail making, and rope works. Dr Arnold, the headmaster of Rugby, was born here in 1795. E. and W. Cowes, each on its respective side of the riv., form the Cowes urb. dist., and are connected by a floating bridge. Osborne House, built in 1845 by Queen Victoria, was one of her favourite residences. Whippingham church, designed by the Prince Consort, E. Cowes Castle (John Nash's residence) and Norris Castle are also noteworthy. Pop. 17,154.

Cowles, Henry Chandler (1869-1937), Amer. botanist, b. Kensington, Connecticut; son of Henry Martyn C. Educ. at Oberlin College and Chicago Univ. Prof. of natural sciences at Gates College, Nebraska, 1894-5, and, later, of botany at Chicago Univ. Works: *Vegetation of Sand Dunes of Lake Michigan*, 1899; *Plant Societies of Chicago*, 1901; *Text-book of Plant Ecology*, 1911; and *Plant Societies of Chicago and Vicinity*, 1913.

Cowley, Abraham (1618-67), poet and essayist, b. London. He was educ. at Westminster and Trinity College, Cambridge. While still at school he pub. 2 vols. of poems, *Poetical Blossoms*, 1633, and *Sylva*, 1636, and wrote a pastoral comedy, *Love's Riddle*, pub. 1638. At Cambridge he brought out a Lat. comedy, *Nafragium Jocularis*, 1638. He was ejected from the univ. as a royalist by the parliamentarians in 1643, and removed to St. John's College, Oxford, where he pub. a satire, *The Puritan and the Papist*, 1643. In 1646, at the surrender of Oxford, he obtained a confidential appointment in the royal household, going to Paris with the queen and dealing with the cipher correspondence between her and the king. He remained abroad for about 10 years, being secretary to Lord Jermyn (the earl of St. Albans), and travelling to Jersey, Scotland, Flanders, Holland, and elsewhere on royalist missions. In 1647 he pub. *The Mistress*, a series of poems in the most exaggerated style of the metaphysical school, and on returning to England in 1656 issued a vol. containing earlier books of poems, *Miscellanies*, *The Mistress*, *Pin-darique Odes*, and *Davidis*, the last an epic which had been largely composed at Cambridge. In 1657 he took the degree of doctor of medicine at Oxford. On the death of Cromwell he returned to France as secretary to the royal family, and at the Restoration, being apparently disappointed at not receiving a greater reward for his loyalty than a lease of some of the queen's lands, retired to the country, living first at Barn Elms and then at Chertsey. He is buried in Westminster Abbey. His other works include 5 books on plants in Lat. (1662, 1668, 1678); a comedy, *Cutler of Coleman Street*, 1641; in prose, *A Proposition for the Advancement of Experimental Philosophy*, 1661; a discourse on the gov. of Cromwell; and some delightfully clear and pleasant essays.

The beauties of his poems are spoilt by false taste and affected wit. See Sir E. Gosse, *Seventeenth-century Studies*, 1883; R. Schafer, *The English Ode*, 1918; and A. H. Nethercot, *Abraham Cowley: the Muse's Hannibal*, 1931.

Cowley, Hannah (1743-1809), dramatist and poetess, b. Tiverton, Devonshire, her maiden name being Parkhouse. In 1768 she married Capt. C. of the E. India Company, who d. in 1797. Her 2 most successful comedies were *The Runaway*, 1776, and *The Belle's Stratagem*, 1780, and she also produced sev. other popular plays and some poems, including *The Maid of Arragon*, 1780; *The Scottish Village or Pitecaine Green*, 1786; and *The Siege of Jeric*, 1799, 1801. Her collected works, in 3 vols., with memoir, appeared in 1813.

Cowley, Henry Richard Charles Wellesley, first Earl (1808-84), diplomat, ednc. at Brasenose College, Oxford. From 1852 to 1867 he was ambas. at Paris, and exercised great influence in the relations between France and England, helping Clarendon to promote the Declaration of Paris, 1856, and Cobden to carry through his commercial treaty between France and England, 1860. He was created Earl C. in 1857.

Cowpen, part of Blyth municipal bor. (q.v.), Northumberland, with coal mines and light industries.

Cowpens, tn in Spartanburg co., S. Carolina, U.S.A., 2 m. S. of the N. Carolina boundary. It is famous for the battle, during the War of Independence, in which the Amer. general Morgan defeated the Brit. under Tarleton (1781). Pop. 1880.

Cowper, Edward (1790-1852), engineer and inventor who in 1827, with his brother-in-law, Applegarth, invented the four-cylinder machine, which was in general use for the printing of newspapers for many years.

Cowper, William, first Earl (c. 1665-1723), statesman, son of Sir Win C., M.P. In 1707 he became the first lord chancellor of Great Britain. He presided at the trial of Sacheverell in 1710, but resigned his office on the fall of the Whig ministry in the same year. George I. reappointed him lord chancellor, and as such he presided at the trial of the rebels of 1715. See Lord J. C. Campbell, *Lives of the Lord Chancellors*, 1845-69.

Cowper, William (1666-1709), surgeon and anatomist, b. Petersfield, Hampshire. He was admitted a barber-surgeon in 1682, and pub. *Myotomia Reformata*, 1694, a treatise on the muscles, and *The Anatomy of the Human Body*, 1698. His name is associated with the glands described by him in 1699, although they had been discovered by Jean Méry in 1684. He was first to describe insufficiency of the aortic valve.

Cowper, William (1731-1800), poet, b. Great Berkhamsted, Herts., of which vil. his father, John C., was the rector. His mother d. when he was very young, and he was sent at the age of 10 to Westminster School, having been removed from his previous school on account of the cruel treatment he had sustained from

another boy. At Westminster his impressions were also somewhat painful, and from his youthful experiences he developed a hatred of public schools which he retained all his life. He had here Warren Hastings and the satirist Churchill as fellow pupils. Shortly after leaving school C. was articled to an attorney named Chapman, but he never showed any intention of practising, though he was called to the Bar in 1754. Though he almost entirely neglected his professional work, his time was not being wasted. He was reading and writing, and, with his brother, trans. part of Voltaire's *Henriade*. He also belonged to the Nonsense Club, and fell in love with his cousin Theodora, daughter of Ashley C. The feeling was reciprocated, but the poet never had the energy



WILLIAM COWPER

to overcome his uncle's objections to the match. Meanwhile he was expecting the influence of his family to secure him some useful gov. post where the position was a sinecure, and this occurred in 1763. His cousin, Maj. C., offered him the post of clerk to the journals of the House of Lords, and he accepted it in preference to a more important post which was also vacant. Before he could take up his position, however, he had to undergo a so-called examination as to his fitness, which really amounted to no more than an appearance before the Bar of the House. C., however, who had already been somewhat given to fits of depression, grew so nervous at the prospect of this appearance that he finally attempted to commit suicide. Fortunately his courage failed him. His mind now gave way, and he was visited with terrible religious despair, describing himself as 'damned below Judas.' In this condition he was removed (Dec. 1763) to a private asylum at St Albans, where he gradually recovered.

In 1765 he settled in Huntingdon, where he became acquainted with the

Unwins, at whose house he soon came to reside. They were an amiable and religious family, and after the death of Mr. Unwin, C. continued to reside with his widow. In 1767 he removed with her to Olney, where he came under the influence of John Newton, curate of the vil. Under this stimulus the poet gave himself up entirely to piety and good works, though too energetically for his health. It is from this period, at the suggestion of Mrs. Unwin, that the real commencement of of C.'s poetic life must be dated. In 1773 his failing health again gave way, and a bout of madness ensued, which clouded his brain for 3 years. In 1779, 3 years after his recovery, appeared the *Olney Hymns*, written by him in conjunction with Newton. His next vol., consisting of secular verse, appeared in 1782, and contained *Table Talk*, *The Progress of Error*, *Truth*, and *Expostulation*. Much of this was the outcome of a new friendship he had just formed with Lady Austen, a widow who had lately fixed her residence at Olney. She it was who told C. the tale of John Gilpin, about which he wrote one of his most delightful poems. Lady Austen then suggested that he should write blank verse, and carelessly pointed to a sofa as a theme. This suggestion was the inspiration of *The Task*, which appeared in 6 books in 1785. But the year before had seen the end of this friendship, perhaps because of Mrs. Unwin's jealousy of Lady Austen's influence. In 1786 Lady Hesketh, sister of Theodora C., came to visit them at Olney, and persuaded them to move to Weston Underwood in 1787. In 1787 came another six months' insanity during which the poet again attempted suicide. In 1791 appeared a trans. of Homer into blank verse which he had started in 1784, and a projected ed. of Milton brought him into touch with the famous Hayley. In 1794 came a final attack of insanity, from which he never entirely recovered. His cousin, John Johnson, took him to Norfolk with Mrs. Unwin, who d. at E. Dereham. The poet lingered on for 4 more years, dying on 25 April 1800. He is buried near Mrs. Unwin in E. Dereham church. C. may justly be described as the herald of the Romantic movement. In him were gathered up and concentrated all the gleams which had shone disconnectedly in Thomson, Gray, Lady Winchelsea, and the novelists. Though he was not one of the greatest poets of the country, his work is important both intrinsically and historically. In addition, he was among the very best of Eng. letter-writers. His letters show the same command of pure idiomatic Eng., the same acute observation, and the same mingling of gentle humour and melancholy. See W. Hayley, *Life and Posthumous Writings*, 1803-4, and *Life and Letters*, 1809; G. Smith, *Cowper*, 1880; T. Wright, *The Life of William Cowper*, 1892, *Correspondence*, 1904, and *Unpublished and Uncollected Letters*, 1925; H. I. A. Fausset, *William Cowper*, 1928; Lord D. Cecil, *The Stricken Deer*, 1929; and T. Gilbert, *William Cowper and the Eighteenth Century*, 1935.

Cowper (afterwards **Cowper-Temple**), **William Francis, Baron Mount-Temple** (1811-88), politician, educ. at Eton. He entered Parliament in 1835 and was raised to the peerage in 1880. His name is chiefly associated with the Cowper-Temple clause (q.v.) of the Education Bill, 1870.

Cowper-Temple Clause. The principle underlying this clause of the Education Act, 1870, which was incorporated on the amendment of Sir (then Mr) Wm Cowper-Temple (q.v.) on the second reading of the Bill, introduced by Mr Arnold-Forster, lies at the root of the bitter controversies that raged round education until 1944. From the moment public elementary schools were estab. it became clear that rate-payers generally had a right to demand the exclusion from such schools of the teaching of any catechism or formula distinctive of any individual denominational creed. The C. C. was designed to effect that exclusion, but applied only to a public elementary school. On the advice of the law officers of the Crown, the Board of Education decided that the teaching of the Apostles' Creed, the Lord's Prayer, and the Ten Commandments is not a contravention of the clause, but that the teaching of that part of the catechism known as the Duties is a contravention. The whole question of religious instruction in schools was revived in 1897 when voluntary schools received a grant in aid, and still more acutely in 1902, when the Education Act of that year made such schools rate-aided. Section 25 of the Education Act, 1944, laid down that the school day in every co. and voluntary school should begin with an act of worship. Religious instruction, according to an agreed syllabus, was to be provided. Parents are free to withdraw their children from both. The provisions of the Act virtually solved the denominational struggle. See **EDUCATION**.

Cowper's Glands, pair of small bodies about the size of a pea, situated in the male just below the apex of the prostate and between the two layers of the triangular ligament. They correspond to Bartholin's glands in the female.

Cowra, tn in Forbes co., New S. Wales, Australia, on the r. b. of the Lachlan R., 300 m. W. of Sydney, and 60 m. SW. of Bathurst. It is the centre of a fertile agric. and grazing dist. Pop. 6230.

Cowrie Pine, see **KAURI**.

Cowry, name given to gastropod molluscs of the family Cypræidae. The shells of the money C. (*Cypræa moneta*) were formerly used as currency in India and Africa. C.s are mainly tropical, some of the larger forms being objects of great beauty. The attractive little European or ridged C. (*Cypræa europæa*) is not uncommon on some Brit. beaches. In the young C. the shell is of the usual spiral type, but as it grows the last formed whorl covers and hides the others. At the same time the lip thickens and turns inwards, so that the opening is reduced to a narrow slit. The spiral structure is revealed if a fully formed shell is broken. See **MOLLUSCS** and **SHELL**.

Cowslip, or *Primula veris*, a species of Primulaceae. The common Eng. variety is a bright yellow herbaceous perennial. The flowers are terminal, rising on scapes, stalks in closely umbellate form. The corolla is gamopetalous and tubular below; the stamens are adnate to the corolla.



COWSLIP

Cox, David (1793-1859), landscape painter, b. Birmingham, and in early life became a scene-painter. He took to water-colour painting and art-teaching, and in 1814 pub. *A Treatise on Landscape Painting*. In 1839 he turned his attention to oils, but his oil-paintings, although masterly, are not so well known as his water-colours. It is impossible to rank C. among the greatest artists, even in water-colours, but he excelled in rendering atmospheric effect and made an individual contribution to the development of Eng. landscape painting as an interpreter of windy, cloudy skies, and of rainstorms beating down on open commons. At his best he was second only to Constable and de Wint. Among his most famous pictures are 'Peace and War,' 1846, sold for £20 by C., and for £3601 in 1872; 'The Hayfield,' sold in 1875 for £2950, the largest sum paid for a water-colour up to that date; 'The Vale of Clwyd,' 1846; 'Bolton Abbey,' 1847. C.'s favourite scenery was in N. Wales, especially around Bettws-y-Coed. See W. Hall, *biography*, 1881; R. and S. Redgrave, *Century of Painting*, 1893; and T. Cox, *David Cox*, 1948.

Cox, Sir George William (1827-1902), divine and mythologist, b. Bonares, India, educ. at Rugby and Trinity, Oxford, pub. *The Mythology of the Aryan Nations*, 1870; *Popular Romances of the Middle Ages*, 1871; *A General History of Greece to the Death of Alexander the Great*, 1876; *History of the Establishment of British Rule in India*, and *An Introduction to the Science of Comparative Mythology and Folklore*, 1881; *A Concise History of England and the English People*, 1887.

Cox, Gonzales, see COQUES.

Cox, Jacob Dolson (1828-1900), Amer. general, b. Montreal, Canada; graduated at Oberlin, 1851; admitted to the Ohio Bar in 1853, and was elected to the State Senate, 1859. He took part as a brigadier-general, U.S.A., in the W. Virginia campaign of 1861, and in many campaigns during the war. He was governor of Ohio, 1866-7, was a representative to Congress, 1877-99, and president of the univ. of Cincinnati, 1885-9. A great authority on military hist. His *Military Reminiscences of the Civil War* was pub. posthumously, 1900.

Cox, Sir Percy Zachariah (1864-1937), administrator. Educ. at Harrow and Sandhurst and began his career in the army, serving in the Cameronians till 1889, when he joined the Indian staff corps. Later he became vice-consul at Zeila, Somali coast, and filled other consular posts at Berbera, 1894-5, at Muscat, 1899-1904, and at Bushire, 1904. He then became political resident for the Persian Gulf, and in 1914 secretary for the dept of India there, and, when the First World War began, chief political officer for the Indian expeditionary force. He was acting minister to Persia in 1919-1920, and closed his career by becoming Iraq's first high commissioner, which post he held for five years.

Cox, Samuel (1826-93), nonconformist divine and writer, b. London. For 25 years he was minister of a Baptist church in Nottingham. C. was the founder and editor (1875-84) of the *Expositor*, and the first 20 vols. are nearly all his work. He pub. numerous theological works, the best known of which are *Salvator Mundi*, 1877; *A Commentary of the Book of Job*, 1880; and *The Larger Hope*, 1883.

Coxie, Michael, see COXIE.

Coxe, Henry Octavius (1811-81), librarian and scholar, b. at Bucklebury, Berks. In 1860 he became head librarian of the Bodleian, Oxford. His reputation as a palaeographer induced the gov. to send him to the Levant in search of anc. MSS. in 1857, but his quest was unsuccessful, though he detected the forgery attempted by Constantine Simonides. He pub. *Rogeri de Wendover Chronica* (5 vols.), 1841-1, for the Eng. Historical Society; *The Black Prince*, 1842, an historical poem written in Fr. by Chaudos Herald; Gower's *For Clamantis*, 1850; and a *Report on the Greek Manuscripts yet remaining in the Libraries of the Levant*, 1858. Under his direction the catalogue of the Bodleian in over 720 vols. was completed, and he was the compiler of *Catalogue of Greek MSS. at the Bodleian*, 1852-54. See J. W. Burgon, *Twelve Good Men*, 1888.

Coxe, William (1747-1828), writer of hist. and travels, educ. at Eton and Cambridge. He travelled on the Continent, once as tutor to the Marquess of Blandford and another time as companion to Lord Herbert. His works include *Travels into Poland, Russia, Sweden, and Denmark*, 1784-90; *Travels in Switzerland*, 1789; *Memoirs of the Life and Administration of Sir Robert Walpole*, 1798; *History of the House of Austria, 1218 to 1792*, 1807;

Memoirs of the Kings of Spain of the House of Bourbon, 1700 to 1788, 1813; and Memoirs of John, Duke of Marlborough, 1818-19.

Coxie, or **Coxcie**, **Michael** (1499-1592), Flem. painter and engraver, b. Mechlin; studied under van Orley and later at Rome, where he was a great admirer of Raphael, on whose works he based his style. His chief works include 'St Sebastian' and 'The Triumph of Christ,' both in the Antwerp Gallery; another 'St Sebastian' in Mechlin Cathedral; and a copy of van Eyck's 'Adoration of the Lamb,' which he executed for Philip II of Spain. He d. at Antwerp.

Coxwell, **Henry Tracy** (1819-1900), aeronaut, one of the best known of Victorian professional balloonists, who made his first ascent in 1844. In 1862 he made a famous high-altitude ascent with J. Glaisher for scientific observation.

Coyote, **Prairie Wolf**, or **Canis latrans**, wolf-like member of the dog family Canidae which inhabits N. America. The fur is long and thick, and the animal has a dirty yellow colour. Its mournful howling in the night is an unwelcome sound to lonely travellers.

Coyote State, see SOUTH DAKOTA.

Coypel, name of four Fr. painters:

Noel Coypel (1628-1707), b. Paris; employed on the decoration of the Louvre in 1655; became an academicien in 1659; became director of the Fr. Academy at Rome in 1672. Returning to Paris later, he executed paintings at the Tuilleries and the vault of the Church of the Invalides.

Antoine Coypel (1661-1722), son of Noel, b. Paris; studied under his father at Rome, and returning to Paris was very popular, decorating sev. royal palaces, and becoming prin. painter to the king in 1715.

Noel Nicholas Coypel (1688-1734), son of Noel, b. Paris; became an academicien at 28. He had a considerable contemporary reputation as a historical painter, which has now diminished.

Charles Antoine Coypel (1694-1752), son of Antoine, succeeded his father in the king's household. Noted for his pastel work and 25 scenes from the life of Don Quixote.

Coypu, popular name of a species and genus of rodent in the family Capromyidae. The technical name of this S. Amer. creature is *Myocastor C.*, and in habit and appearance it resembles a large water rat. Its maximum length is about 2 ft, its general colour a brownish-red, and the edges of the lips and muzzle are whitish. It has short limbs, small ears, a long naked tail, and the hind feet are webbed. The fur (nutria) is used for coats, and the flesh is sometimes eaten. The diet of the C. is principally vegetarian.

Coysevox, **Antoine** (1640-1720), Fr. sculptor, b. Lyons, of a Sp. family; studied in Paris under Lerambert, and produced a statue of the Virgin before he was 17. In 1667 he went to Alsace to decorate the palace of Cardinal Fürstenberg, which occupied him for 4 years. On returning to Paris he executed 2 statues of Louis XIV, one being an equestrian figure commissioned by the prov. of Bretagne. He

became very famous, and was admitted into the Academy in 1676, later becoming chancellor of that body. Among his chief works are the tombs of Cardinal Mazarin and of Colbert, in St Eustache; the monument of Charles le Brun in St Nicholas; the statue of Condé and that of Louis XIV in Notre-Dame; the two-winged horses in marble surmounted by Fame and Mercury placed one on each side of the entrance to the garden of the Tuilleries from the Place de la Concorde; and sev. statues in the gardens of Marly and Versailles. His bust by Lemoine is in the Musée des Monuments Français. See life by G. Keller-Dorian, 1920.

Cozens, **Alexander** (c. 1717-86), landscape painter, b. Russia, where Peter the Great had invited his father to stay as shipbuilder. He was sent to Italy to study painting, and from there went to England and settled there in 1746. From 1760 to 1781 he exhibited many pictures, some of them at the Royal Academy. During this period, moreover, he spent much time in teaching, and was from 1763 to 1768 drawing master at Eton. Many of his earlier works in colour, pen and ink, and pencil are in the Brit. Museum. He was the author of sev. works on art, including his 'New Method' of evolving landscape compositions from blots or rough smudges.

Cozens, **John Robert** (1752-99), landscape painter in water-colours, was the son of Alexander C., and was b. in England. It has been said that he was 'the greatest genius who ever painted a landscape,' and though this is too great praise he was of undeniable importance in the development of Brit. landscape painting. He was first instructed in painting by his father. In 1776 he went to Switzerland with R. Payne Knight, and returned to England in 1782; in 1783 he went to Italy with Wm Beckford. He first exhibited at the Incorporated Society of Brit. Artists in 1767, and he made some beautiful sketches of the trees in Windsor Forest. In 1794 he became insane. Many of his works are to be found in the print room at the Brit. Museum; they are noted for their delicacy and their beautiful colouring, and they certainly influenced Turner and Girtin. Constable said that 'the works of Cozens are all poetry.'

Crab, **Roger** (c. 1621-80), hermit, b. Buckinghamshire. From 1642 to 1649 he served in the parl. army and was wounded in the head. In 1651 he sold his business in Chesham as a 'haberdasher of hats,' and built a hut where he retired and practised great austerities. He was accused of witchcraft and persecuted, being imprisoned, cudgelled, and put in the stocks. He pub. *The English Hermit*, 1655; *Dagon's Downfall*, 1628; and tracts against the Quakers. See R. Chambers, *The Book of Days*, 1862-4.

Crab, name applied to various mechanical weight-lifting contrivances, including an engine with 3 claws used in the launching and docking of ships, a portable windlass used in building and in loading and unloading operations, and a kind of pillar used as a capstan.

Crab, popular term applied to numerous species of decapod crustaceans, properly only to those in the div. Brachyura, but also commonly to others included in the Anomura. The true C.s have short antennae, eyes which can be retracted into sockets, a short tail which is tucked up under the cephalothorax, a compressed body covered by a hard carapace, and two large anterior claws curved closely round the carapace, these being usually larger in the male than in the female. In diet they are carnivorous, and will feed on carrion or on living matter; a few species sometimes vary their food with vegetables. Nearly all of the C.s are marine, but there exist also land C.s, which would drown if kept in water; some are so tiny that they will hide in disused shells, and others have a fondness for burrowing in sand and mud. Many of the males are pugnacious, and will fight bitterly with an opponent; some are capable of casting a claw in self-preservation, and all are able to regenerate a missing limb. In intelligence they rank probably highest of the crustaceans. The hermit or soldier C.s are anomurous, and are characterised by having a fleshy, spirally twisted abdomen, usually covered over by an empty gastropod shell; they are united in the tribe Paguridae, of which the genus *Pagurus* is typical. The species in the tribe Galatheiidae are symmetrical in shape, and the young are noted for the length of the spines on the carapace; the species and genus *Aeglea laevis* is found in fresh-water streams of S. America. The tribe Hippidae comprises the sand or mole C.s, and *Hippa eremita* burrows in the sand. The brachyurous species are divided into five tribes: (1) Brachyura Anomala, Notopoda or Dromiacea, of which *Dromia vulgaris* is a common Brit. representative; (2) Oxytomata, in which are found the genera *Dorippe* and *Cymonimus*; (3) Oxyrhyncha, which contains spider C.s and others, e.g. *Maia*; (4) Catometopa, in which occurs *Sesarma pisonii*, a climbing and air-breathing species, and also the calling-C. genus *Gelasimus*, whose members have one claw larger than the others, and this is borne in a beckoning manner; (5) Cyclometopa, to which belong *Cancer pagurus*, the large edible C. seen in markets, *Carcinus moenas*, the common shore-C. of Britain, *Portunus puber*, the velvet or devil C., and *Corystes cassidellus*, the masked C., a curious species bearing on its carapace marking as of a human face. See also KING-CRAB.

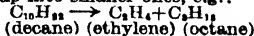
Crab, The, see CANCER.

Crab Apple, or *Malus sylvestris* (synonym *pumila*), family Rosaceae; native of Britain, Europe, and SW. Asia; progenitor of cultivated apples, makes a small round-headed tree, of which the yellow fruits are tart, and chiefly used for preserves and jellies. 'Dartmouth,' 'John Downie,' 'Golden Gem,' and 'Veitch's Scarlet' are garden forms grown for their ornamental value.

Crabbe, George (1754-1832), poet, b. Aldeburgh, Suffolk, the son of a schoolmaster and par. clerk. He had only a very rudimentary education, but by his devotion to his books soon overcame this

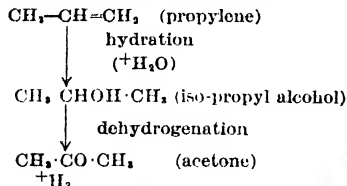
defect. Destined for the medical profession, he served as apprentice, first to a doctor at Wickham Brook, and presently to another at Woodbridge, in which latter place he first met his future wife, Sarah Elmy, the Mira of his poems. He now began to write verse, and, in 1780, with a borrowed five-pound note and some MSS., went to London to seek fame and fortune. He found the metropolis a cold-hearted stepmother, and he was at the end of his tether, when, having failed to secure a hearing elsewhere, he sent *The Candidate* to Burke. Burke read it, saw its merits, and induced Dodsley to publish it in 1780. At Burke's suggestion C. took orders and, after a term as a curate, was in 1782 appointed chaplain to the duke of Rutland. In the following year *The Village* appeared, and 3 years later C. pub. *The Newspaper*, after which, though he wrote—and destroyed—diligently, he remained silent for more than a score of years. In 1807 he broke his long silence by the pub. of *The Parish Register*, and this work he followed 3 years later with *The Borough*. He paid a visit to London in 1817, and was everywhere received as the distinguished man of letters he was. Two years later he pub. his last great work, *Tales of the Hall*, for which John Murray gave him £3000. He d. at Trowbridge, where the living had in 1813 been given to him by the duke of Rutland. A monument to his memory has been erected in Trowbridge church. Much of his work was in a way a protest against the pastoral poetry in the style of *The Deserted Village*. He endeavoured to paint nature as it was, and in this he succeeded greatly. His complete works were ed., with a life, in 8 vols. by his son George, 1834; and his poetical works by A. J. and H. M. Carlyle 1908, 1914. See T. E. Kebbel, *The Life of George Crabbe*, 1888; A. C. Ainger, *Crabbe*, 1903; R. Huchon, *Un Poète réaliste anglais, George Crabbe, 1754-1832* (with bibliography), 1906 (Eng. trans. by F. Clarke, 1907); J. W. Holme, *The Treatment of Nature in Crabbe*, 1912; J. H. Evans, *The Poems of George Crabbe: a Literary and Historical Study*, 1933; and *The Life of George Crabbe*, by his son (with introduction by Edmund Blunden), repub. 1947.

Cracking of Petroleum. Crude petroleum is a mixture of paraffin and aromatic and naphthene hydrocarbons. Distillation separates it into fractions each of which consists of hydrocarbons having a wide range of boiling points, e.g. natural gas, motor spirit (35-200° C.), kerosene (150-300° C.), gas oil, and fuel oil. Some of these fractions are used directly for the manuf. of chemicals, but the gas oil is cracked. This process consists of heating a petroleum product to a high temp. and pressure, causing the large molecules to break up into smaller ones, e.g.:



The gas oil is heated in a vaporiser furnace and distilled. The heavier fractions are used as fuel oil, the lighter ones being passed to the cracking furnace and distilled. This yields gases rich in the

type of unsaturated hydrocarbon, the olefine, such as ethylene, propylene, butylene, etc. They are the starting materials for the manuf. of a large variety of alcohols and ketones. For example, propylene is hydrated, giving iso-propyl alcohol which is used as a solvent for lacquers and which, on dehydrogenation, gives acetone, this being used in the manuf. of viscose rayon, plastics, perfumes, drugs, etc.



which is used in the manuf. of Nylon 66. Very long chain hydrocarbons can be separated from petroleum and cracked to give higher olefines which are then treated with sulphuric acid to produce synthetic detergents, e.g. 'Teepol.' Cracking processes are thus producing very many of the chemicals which were originally derived from coal, and are capable of producing almost any organic chemical.

Cracovienne, see KRAKOWIAK.

Cracow (Pol. **Kraków**, Ger. **Krakau**):

1. Prov. (*województwo*) of S. Poland, bordered on the S. by Czechoslovakia. It is crossed W.-E. by the Vistula (q.v.), and in the S. has ranges of the Carpathians (q.v.). There is some industry, and there are important salt deposits. Area 6140 sq. m.; pop. 2,133,400.

2. Historic city of Poland, cap. of C. prov., on the l.b. of the Vistula, 158 m. SW. of Warsaw. It occupies an important



CRACOW

E.N.A.

The Vistula, with the cathedral of St Stanislaus and the old royal castle in the background.

The hydrogen produced is very pure and is used in certain hydrogenating processes, e.g. hardening of fats and manuf. of ammonia and methyl alcohol. Dehydrogenation of butane and butylene gives butadiene, the starting point for the production of synthetic rubber. Ethylene has become an important raw material for the production of ethylene glycol (an anti-freeze), ethyl chloride in the manuf. of tetra-ethyl lead (an anti-knock in petrol), and ethyl glycol. Ethylene has been chlorinated at high temps., the product being used in the manuf. of glycerine. Certain cracking processes using a copper catalyst yield high proportions of aromatic hydrocarbons such as benzene, toluene, xylene, etc. Ortho-xylene, for instance, is used to make phthalic anhydride, a component of 'alkyd' synthetic resins. Phenol can be made into adipic acid

stratological position, 672 ft above sea level, in a wide plain commanding the riv. approach to Silesia and to the Danube valley via the Moravian Gate. The city may be divided into the old tn, with promenades formed on the old walls; the castle quarter, lying to the S.; and the suburbs, including the former Jewish Kasimierz quarter and Posgorz, on the other side of the riv., with which C. is connected by a bridge built in 1856. C. is a very picturesque tn, and contains many interesting buildings. Among them are the castle, on the Wawel Rock, long the residence of the kings of Poland; the Gothic cathedral (1320-59), adjoining the castle, where many of the kings and famous men of Poland, including John Sobieski, Poniatowski, and Kosciuszko, are buried, and which contains Thorwaldsen's statue of Christ; the univ., next to Prague the oldest in central Europe,

having been founded in 1364 by Casimir the Great and reorganised in 1817, and which is situated in the W. part of the city, and possesses a library of 350,000 vols., a botanic garden, and an observatory; the recently restored Cloth Hall, in Ring Square, which contains the Polish National Museum; the Episcopal Palace; the Royal Academy of Sciences; and the Czartoryski Museum. About 3 m. to the W. of the city is a grassy tumulus over 100 ft high, which was raised in 1820-3 in commemoration of the patriot Kosciuszko. Another mound has been piled up in memory of the legendary Krak, or Krakus, a Slavonic prince, who is said to have founded the city about 700, and to have given it its name. It is more probable, however, that the name is derived from the Slavonic *krak*, a raven. There are manufs. of cloth, leather, machinery, agric. implements, chemicals, beer, tobacco, etc. C. was the cap. of the kingdom of Poland from 1320 to 1609, when Warsaw became the seat of gov., C. remaining the coronation city for a century and a half longer. The third partition of Poland in 1795 assigned C. to Austria. From 1809 to 1815 it was part of the duchy of Warsaw, and during 1815-46 was the cap. of the rep. of C. This, forming the last stronghold of Polish independence, comprised a ter. of 445 sq. m. After a rebellion it was re-annexed to Austria in Dec. 1846. During the First World War much fighting took place round C. in the latter months of 1914. In Sept. of that year there were indications that the Russians under the Grand Duke Nicholas would endeavour to enter Germany via Moravia, and the Central Powers made plans to counter this move. In their retreat before the Russian 'steam-roller' both Ger. and Austro-Hungarian troops in this region concentrated upon C., the capture of which was essential to the Russian plan of invading Germany. During the last weeks of Nov. the Russians made persistent efforts to break the line between Łódź and C., but failed, and at the latter place the Austrian forces gallantly held their own and foiled all Russian onslaughts. In 1917 there were riots in C., as in other important tns of the constituent countries of the dual monarchy, organised by agitators against the oppression of subject nationalities. On 1 Sept. 1939 C., together with many other Polish cities, was bombed by the Germans simultaneously with their general attack on Poland. C. fell to the Germans on 6 Sept. 1939. It was the cap. of the so-called general gov., and Frank (q.v.), the governor, later tried at Nuremberg, had his H.Q. in Wawel Castle. It was recaptured by Russian troops on 14-16 Jan. 1945 (see EASTERN FRONT; RUSSO-GERMAN CAMPAIGNS IN SECOND WORLD WAR). Pop. 423,000.

Cradley, par. and tn, Worcestershire, England, 3½ m. S. of Dudley, with coal- and iron-mines and manufs. of iron and steel goods. Pop. 9300 (1954).

Cradling, in architecture, a slight framework of timber built under floors to form curved ceilings, etc.

Craddock, Rear-Admiral Sir Christopher (1862-1914), sailor, b. Hartforth, Yorks, and entered the navy in 1875. His first active service was in the 1884 Egyptian campaign, and he was also in the 1891 campaign in the Sudan. In the 1900 China campaign he commanded the Naval Brigade. His gallantry and fearlessness were proverbial in the navy. Promoted captain in 1900 and rear-admiral in 1910. He commanded the cruiser squadron at the battle of Coronel (q.v.), 1 Nov. 1914, which was sunk by the Ger. squadron under Admiral von Spee, C. going down in his flagship, the *Good Hope*. There is a memorial to him in York Minster. He was a writer on naval subjects.

Craddock, tn and dist. in Cape Province, S. Africa, 56 m. SSE. of Middelburg. Altitude 2856 ft. Founded 1814 as a frontier post, C. is an important centre of wool, hides, and skins, as well as of mohair production. Olive Schreiner is buried near C. Pop.: Whites, 4765; Bantu, 6715; Coloureds, 3323; Asiatics, 36.

Crafers, tn of S. Australia, 21 m. SE. of Adelaide; nearest station Mount Lofty. The dist. is famous for fruit growing. Pop. 2000.

Crag, term applied in geology to the uppermost of the Tertiary strata in England. It is a shelly sand occurring in E. Anglia, being the only example of a Pliocene stratum. The C. strata consist of the following members, beginning with the uppermost: (1) the Forest Bed series, containing many animal and plant remains; (2) the Chillesford beds, containing a molluscan fauna; (3) the Norwich C., containing both marine and freshwater shells; (4) the Red C., being a subcalcareous sand rich in shells; (5) the White or Coralline C., being a calcareous mass with argillaceous bands containing Mollusca and Bryozoa. The term C. is taken from the local name for shelly sand.

Crag and Tail, term applied to a peculiar formation of hills in which one side forms a steep and precipitous cliff, while the other 'tails' away in a gentle slope. This is due to glacial action on rocks of varying hardness, the harder rocks (generally igneous, such as dolerite or basalt) having resisted denudation and so protecting the softer rocks on the lee side. The 'crag' thus generally faces the direction from which the ice came, while the 'tail' faces the direction in which it was advancing. The phenomenon is very prevalent in the lowlands of Scotland and especially round Edinburgh; the Castle Rock of Edinburgh and the Abbey Craig of Stirling are two of the most famous examples of this formation.

Craig, Edward Gordon (1872-), theatrical designer and actor, b. near London, son of Ellen Terry (q.v.) and Edward Wm Godwin, architect and archaeologist (1833-86). Educ. at Bradfield College and Heidelberg Univ., on leaving which in 1889 he adopted the name of Edward Gordon C., legalised by deed-poll 24 Jan. 1893. He made his début under Sir Henry Irving at the Lyceum as Arthur St Valery in *The Dead Heart*, and in the

ensuing 10 years took part in various plays of Shakespeare and in *Ravenswood*, *The Lyons Mail*, *School for Scandal*, etc., his best roles being Biondello, Cassio, Petruchio, and Charles Surface. His powers as a designer and producer were first shown in the production of Purcell's *Dido and Aeneas* in 1900, and soon after this in *Bethlehem*, *Sword and Song*, and *The Vikings*, in which he made artistic innovations in scenery and costume, lighting and stage management; and in 1905 he prepared designs for Eleonora Duse for the production of *Elektra*. Memorable productions by him include those of *Hamlet*, at the Moscow Art Theatre in 1912, and of Ibsen's *The Pretenders*, at the State Theatre, Copenhagen, in 1926. The designs used in the latter were pub. in 1930, entitled *A Production*. C. also illustrated an ed. of *Hamlet*, pub. by the Cranach Press, Weimar, in 1930. In 1913 he founded a school for the art of the theatre at Florence. His ideas as a theatrical artist, as described in a series of pamphlets and papers collected and pub. under the title *On the Art of the Theatre*, have germinated, and, through Reinhardt, Jessner, Stanislavsky, and the Russian ballet, have spread throughout the world. The essence of his theories as a practical producer is that the 'art of the theatre is neither acting nor the play, it is not the scene nor dance, but it consists of all the elements of which these things are composed,' and, as a philosopher, he wished the theatre to be 'a place in which the entire beauty of life can be unfolded, and not only the external beauty of the world, but the inner beauty and meaning of life.' The theatrical producers found it impossible to believe that he was anything more than a vague philosopher of an impossible theatre, but through his mother he had his chance in 1903 to reveal his genius; and the beauty of his productions of *The Vikings* and *Much Ado About Nothing* won the admiration of Wm Rothenstein and Count Kessler, even though, commercially, both were failures. Kessler wanted him to produce a play at Weimar for the grand duke, but his revolutionary theories were not likely, in his own view, to appeal to the actors there, and, instead, he went to the Lessing Theatre at Berlin and there produced Hoffmannstall's version of *Venice Preserved*. Berlin recognised his genius: his shadowy settings with their soaring arches, their deceptive simplicity, and their perfect proportion filled Reinhardt and Jessner with ideas for their work and made possible the expressionism (q.v.) of the Ger. theatre of the twenties and such films as *The Cabinet of Dr Caligari*. Exhibitions of C.'s designs toured Germany and Austria, and from that time his influence spread through central Europe.

C. is also celebrated as a wood-engraver, an art which he began to practise in 1893 at the instance of Wm Nicholson, the artist. Some of his woodcuts are reproduced in *Woodcuts and some Words*, 1924, and many originals are in the Victoria and Albert Museum. Books by C. include *The Art of the Theatre*, 1905; *On the Art*

of the Theatre, 1911; *Towards a New Theatre*, 1913 (contains plates of designs for Shakespeare, Ibsen, and other dramatists); *The Theatre Advancing*, 1921; *Scene*, 1923; *Books and Theatres*, 1925; *Henry Irving*, 1930; and *Ellen Terry and Her Secret Self*, 1931. See E. Rose, *Gordon Craig and the Theatre*, 1931.

Craig, John (c. 1512-1600), Scottish reformer, educ. at St Andrews and became a monk. He was patronised by Cardinal Pole, and on his advice joined the Dominicans, becoming rector of their school at Bologna. He was converted to Protestantism by reading Calvin's *Institutes*, and having made open confession was tried by the Inquisition at Rome and condemned to be burnt to death. The day before his execution, however, Pope Paul IV d., and the prison being broken open by a mob, he escaped and returned to Scotland about 1560, where he became one of the most popular preachers of the recently estab. Reformation. In 1574 he became minister of Aberdeen, in 1577 the colleague of John Knox at the par. church of Edinburgh, and in 1579 one of the chaplains of the household of James VI. In 1580 he drew up the *National Covenant*, and later compiled part of the *Second Book of Discipline*, and sev. treatises.

Craig, Sir Thomas (1538-1608), jurist, b. Edinburgh; studied at St Andrews Univ. and in Paris. His great work, *Jus Feudale*, completed in 1603, but only pub. in 1655, is still consulted, and he also wrote a treatise proving the legality of James's right to the Eng. throne. See his life by P. F. Tytler, 1823.

Craigavon of Stormont, James Craig, first Viscount (1871-1940), soldier and statesman, son of James Craig of Craigavon, Down, N. Ireland; educ. at Merchiston School, Edinburgh. He served with the Imperial Yeomanry and Irish Horse in S. African war, 1899-1902. His election for Down, 1906, to the House of Commons at once placed him in the front rank of Ulster Unionists. When Sir Edward Carson assumed the leadership in Ulster, C. was his right-hand man in the fight for Ulster's integrity against Asquith's Home Rule Bill. He joined Lloyd George's Gov. in 1916 as treasurer of the household, but resigned in 1918 when Carson resigned from the War Cabinet. He was parl. secretary to the minister of pensions, 1919-20, and then parl. and financial secretary to the admiralty, 1920-1. In June 1921 he resigned his Eng. office on becoming first Prime Minister of N. Ireland. He was made a viscount in 1927. C. was all his life an uncompromising champion of Ulster's membership of the Brit. Commonwealth, and must be regarded as one of the creators of Ulster in its present political form.

Craigie, Pearl Mary, see HOBBS, J. O. **Craigie, Sir William Alexander** (1867-1957), lexicographer, b. Dundee. Educ. at St Andrews and Oxford, in 1897 he joined the staff of the *Oxford English Dictionary*, of which eventually he became editor-in-chief; on its completion in 1928 he received a knighthood and honorary doctorates of Oxford and Cambridge. From 1915 to

1925 he was Professor of Anglo-Saxon at Oxford, then occupied a Chair in Chicago, where he compiled a 4-vol. *Dictionary of American English*, 1944. His latest task was a *Dictionary of the Older Scottish Tongue*, which covers the language to the end of the 17th cent.

Craik, Dinah Maria, née Mulock (1826–1887), novelist, *b.* Stoke-upon-Trent, where her father was minister. She settled in London at 20 to write for the support of an invalid mother and 2 young brothers. Her first novel, *The Ogilvies*, 1849, was followed by *Olive*, 1850; *The Head of the Family*, 1851; and *Anatha's Husband*, 1853. Her famous book *John Halifax, Gentleman*, 1857, met with an immense success not only in England, but, through trans., in France, Germany, Italy, Greece, and Russia. A pension of £60 a year awarded to her she placed at the service of poor authors. Among her other works are *A Woman's Thoughts about Women*, 1858; *Thirty Years. Poems, New and Old*, 1881; *Concerning Men and Other Papers*, 1888. See Louisa Parr, *The Author of 'John Halifax, Gentleman': a Memoir*, 1898; and A. L. Reade, *The Mellards and their Descendants*, 1915.

Crail, the Caryl of the 9th cent., anct seaport in SE of Scotland, in Fifeshire, 9 m. SE. of St Andrews. Its fishing industry has declined, but it is an attractive summer resort. Here John Knox preached his 'idolatrous sermon,' 9 June 1559. Pop. 1300.

Crailsheim, Ger. tn in the *Land of Baden-Württemberg* (q.v.), on the Jagst, 48 m. NE. by R. of Stuttgart (q.v.). It has many old buildings, including a fine 14th cent. church. There are tanning and textile industries. Pop. 10,000.

Craiova (Krajova), chief tn of the prov. Craiova, Rumania, 120 m. W. of Bucharest, with many manufs., including (in 1940) belting, candles, soap, conserves, *terra cotta*. There are also flour mills. There are many churches and synagogues. It is the centre of the very fertile Oltenia dist. Pop. (1948) 85,000.

Crake, member of the family of the *Rallidae* (Ralls), order of the *Grulliformes*. The best-known Brit. C. is the corn-C., whose cry may be heard all over the country in the early summer. They are short-billed, thick-bodied birds. The colour is reddish-brown, lighter below, with dark brown streaks on the feathers above. The corn-C. is becoming rarer in England every year.

Cram, Ralph Adams (1863–1942), Amer. architect and author, *b.* Hampton Falls, New Hampshire. Started practice in Boston, 1889. As senior partner of C., Goodhue & Ferguson he helped to design many notable buildings, e.g. Graduate College and Cleveland Tower, Princeton Univ.; the cathedrals of St John the Divine, New York, 1911; St Alban, Toronto; and St Paul, Detroit; also the buildings of the W. Point Military Academy, and of Wheaton College, Norton, Mass. He was an enthusiast for and an authority on Gothic. Among his books are *The Ruined Abbeys of Great Britain*, 1906; *The Gothic Quest*, 1907;

The Substance of Gothic, 1916 (Lowell lectures); and *Walled Towns*, 1919.

Crambe, genus of 20 species of *Cruciferae*, perennial herbs of which *C. maritima* is the native Sea-kale, in gardens cultivated for its delicious shoots. *C. cordifolia* and *C. orientalis*, of E. Asia, are grown for their handsome foliage; flowers are small.

Crambeck Ware, a local variety of Rom. pottery manufactured at Crambeck, Castle Howard, Yorks, during the 4th cent. It is chiefly buff in colour and decorated with reddish-brown paint.

Crambus (Gk *krambos*, parched), genus of insects in the family *Pyrallidae*, the vaneers, or grass-moths, is well represented in Britain. The species are small and inconspicuous, and are to be found in grassy places.

Cramer, Gabriel (1704–52), Swiss mathematician, *b.* Geneva. Until 1724 he held the chair of mathematics in the univ. of Geneva jointly with Calandrin. He wrote *Introduction à l'analyse des lignes courbes algébriques*; also on elementary determinants and on the physical cause of the spheroidal shape of the planets and the motion of their apses.

Cramer, Johann Baptist (1771–1858), Ger. pianist and composer, one of a family of musicians, the most famous of the three sons of Wilhelm C. (1745–99), himself a musician settled in London. His compositions are no longer valued, but his technical exercises are still useful and his *Études*, esteemed by Beethoven, contain fine music. He founded the music publishing firm which bears his name.

Cramlington, part of the urb. dist. of Seaton Valley (q.v.), SE. Northumberland, England. Pop. (1954) C. 7763; urb. dist. 26,200.

Cramp, see SPASM.

Cramp, Crampenn, metal fixing bar used in masonry, bent at both ends and let into the upper surfaces of two blocks of stone that have been joined at their perpendicular faces. Non-corrodible alloys should be used; iron and steel are liable to rust, and the resulting expansion may split the stone.

Cramp Rings, rings worn to ward off attacks of cramp. From the 11th cent. to the time of Queen Mary rings blessed by the sovereign on Good Friday, and made of the gold and silver coins offered by him on that festival, were supposed to possess the power of curing cramp, *serofula* or 'the king's evil,' and epilepsy.

Crampton, Thomas Russell (1816–88), railway engineer, *b.* Broadstairs. He invented the locomotive which bears his name and which for 40 years was used by the N. of France railway for its express trains. He invented also a rotary dust-fuel furnace, brick-making machinery, etc., and an automatic hydraulic tunnel-boring machine which aroused great interest in connection with the Channel tunnel project. C. laid the first successful submarine cable between Dover and Calais in 1851.

Cran, in Scotland, a measure of herring, just taken from the net, that will fill a barrel; equal to 37½ imperial gallons or about 750 herrings.

Cranach, or Kranach, Lucas (1472-1553), called the Elder, Ger. painter and engraver, *b.* Cranach, near Bamberg, Bavaria, his family name being Sunder. After 1504 he worked for nearly 50 years at the electoral palace at Wittenberg. In 1508 Frederick the Wise granted him the crest of a winged serpent, with which all his prin. pictures are marked. He was an intimate friend of Melancthon and Luther, painting portraits of both, and being a witness to, and one of the convivers at, the latter's marriage to Catherine Bora. He was twice burgomaster of Wittenberg, and *d.* at Weimar. His style seems to have been formed by Matthew Grünewald, and his work is more admirable for invention than execution. Among his best works are 'Christ on the Cross,' being the altar-piece at Weimar, and 'The Preaching of John the Baptist.' His engravings, both on wood and copper, are excellent but very rare. His works are numerous, and may be seen at Weimar, Prague, Leipzig, Schneeberg, Gotha, Munich, and Berlin. In 'Charity' and 'Jealousy' the National Gallery has delightful examples of his nude allegorical figures. See his *Life and Works* by Heller (Nuremberg), 1854.

Cranach, or Kranach, Lucas (1515-86), called the Younger, Ger. painter, son of Lucas C. the Elder. The son of his father's devoted helper and collaborator, and it is often difficult to decide whether a picture is the work of the elder or of the younger C., so much do their separate paintings resemble each other in style, etc. Some of his pictures are at Wittenberg and others at Dresden, Munich, and Berlin.

Cranberry, species of *Oxycoccus*, family Ericaceae, evergreen, creeping shrubs, of which *O. palustris*, the C., is found in bogs



CRANBERRY

throughout Britain, and *O. microcarpus*, the small C., in Scottish Highlands. *O. macrocarpus* is the large Amer. C., grown for its red edible fruits, used for sauces, jellies, and preserves.

Cranborne, par. of Dorset, England, 26 m. N.E. of Dorchester, in the woodland tract known as O. Chase. Boadicea is believed to have fought the Romans here. C. was a royal manor from the Conquest to the 17th cent.; its antiquities include a

hunting residence of King John. C. Abbey was transferred to Tewkesbury in the 13th cent. Pop. 800.

Cranbrook, tn and par. pleasantly situated in the weald of Kent, England. It has a large trade in hops and fruit. From the 14th cent. to the 17th it was a busy site of the broadcloth manuf., introduced there by the Flemings. St. Dunstan's Church contains a celebrated baptistery. C. School was founded about 1520 by John Blubery, and received a royal charter in 1574. Pop. 4000.

Crandall, Prudence (1803-90), Amer. school teacher, *b.* Hopkinton, Rhode Is.; her parents were Quakers; she estab. at Canterbury, Connecticut, a private academy for girls, where she lost her white patrons by admitting a coloured child. She then opened, on advice of W. L. Garrison, a school for 'young ladies and little misses of colour,' in connection with which she was subjected not only to social persecution, but also to prosecution under special enactment of the state legislature, i.e. the Black Law of 24 May 1833. She refused to obey this law, and was imprisoned sev. months. In 1834 her house was attacked and partially destroyed. She gave up her project and married the Rev. Calvin Philleo; after which she lived in Illinois and Kansas.

Crane, Stephen (1871-1900), Amer. writer, *b.* Newark, New Jersey. Fourteenth child of a Methodist preacher, he studied for some time at Syracuse Univ. and then entered newspaper work. His first book, a harshly realistic novel, *Maggie: a Girl of the Streets*, 1893, did not attract much attention, but in 1895 appeared his masterpiece *The Red Badge of Courage*, a graphic picture of scenes taking place during the Amer. Civil war. Later he was a war correspondent in the Greco-Turkish war and in America's war with Spain. Previously he had been on a filibustering expedition to Cuba. The ship on which he was a passenger was wrecked. The exposure permanently affected his health and eventually brought about his early death, but it also gave him the inspiration for one of the finest short pieces in Amer. literature—'The Open Boat,' 1897. C. was also precursor of the free-verse school, which in after years was to be made celebrated by the Imagists. He pointed the way in his 2 vols. of verse *The Black Riders*, 1895, and *War is Kind*, 1899. He came to England in failing health and became a close friend of Joseph Conrad. He *d.* of consumption at Badenweiler in the Black Forest. See life by T. Beer, 1923.

Crane, Walter (1846-1915), painter, designer, book illustrator, writer, was *b.* Liverpool, son of Thomas C., an artist, from whom he received his first lessons in painting. His illustrated children's books are masterpieces and include *Baby's Bouquet*, *Pan-pipes*, Grimm's *Household Stories*, Spenser's *Faerie Queene*, *Illustrations to Shakespeare's Tempest*, etc. He owed his reputation as a painter chiefly to his water-colour paintings, though he worked in oils too. Among his easel pictures are 'The Bridge of Life,' 'The

Chariot of the Hours,' 'La Belle Dame Sans Merci,' 'A Masque of the Four Seasons,' 'Prometheus Unbound,' etc. His pictures are generally allegorical in subject and the pre-Raphaelite influence predominates. A number of private homes and public buildings contain decorative work—modelling, friezes, panels, and mosaics—by him, and some of his designs for tapestries are in the Victoria and Albert Museum. He, jointly with Wm Morris, brought about the revival of the decorative arts and crafts in England; he was the first president of the Arts and Crafts Exhibition Society, 1888, and helped to found the 'Art Workers' Guild.' He wrote, among other works, *The Basis of Design*, 1898; *Line and Form*, 1900; *Ideals in Art*, 1905; and an autobiography, *An Artist's Reminiscences*, 1907. See P. G. Konody, *The Art of Walter Crane*, 1902.

Crane, member of the family of the Gruidae, order Gruiformes, superficially resembling the heron, with which it is commonly confused, and which in Scotland is usually called the C. The C.s are tall birds with long legs and necks, the head being either naked or tufted. Their wings are short and powerful, the feet unwebbed. They are the largest of the wading birds, and are found in most parts of the world except Malaysia. The hind toe is greatly elevated, and has a sharp claw. Noteworthy among this species is the N. Amer. whooping C. whose breeding places have for long been a mystery. Recent discoveries of the birds in Saskatchewan may enable steps to be taken for their protection, and to save them from rapid extinction. The European C. is now only known in England as a migrant, passing to the N. to breed.

Crane, machine for raising, lowering, or placing in position heavy bodies. From early times such appliances have been in use, of simple construction and actuated by manual or animal power. Modern C.s are worked by steam, hydraulic, or electric power.

Derrick cranes have an upright member pivoted at the ends, the top being maintained in position by two raking members anchored at their lower ends. From the foot of the derrick slopes a raking jib, guyed at its upper end to the derrick top, suitable crab and lifting tackle being provided.

Portable cranes are jib C.s mounted upon a carriage running upon rails. The jib is tied back to the upper part of a frame turning horizontally upon a pivot. The rear end of the frame is carried back to support the crab gear, which, with supplementary weights, balances, in whole or in part, the load to be lifted. Steam power is also used to operate such C.s, a vertical boiler and engine, with the necessary gear and winding drum, being substituted for the crab. Jib C.s are also mounted on specially constructed motor vehicles.

Gantry cranes consist of girders mounted on end wheels, carrying a crab, and are able to lift and transfer loads to the limit of the gantry run. The crab is made also

to travel along its girders, giving a double motion.

Goliath cranes have power appliances for lifting, mounted and running upon girders with rigidly framed legs at either end supported by wheels resting upon rails, along which the whole machine may move. They are used in the shifting and setting of heavy blocks in harbour work, or other heavy operations.

Titan cranes used for similar purposes have horizontal girders, capable of swivelling upon a turntable which is mounted at the top of a travelling substructure. At one end of the double girder is the power plant. By an ingenious arrangement the load can be moved along while hanging from the arm of the Titan, remaining at the same level, rising, or falling as desired.

Hammer-headed cranes are similar to Titans, but work on a fixed tower.

Hydraulic cranes, largely used about docks, are simple machines operated by water pressure through the medium of a ram having pulleys, served with a chain or rope passing over the head of a projecting jib, which may be swan-necked in form. See W. H. Atherton, *Hoisting Machinery*, 1940.

Crane-fly, or **Daddy-long-legs**, popular names given to members of the Tipulidae, a family of dipterous insects containing over 1000 species world-wide in distribution. The significance of the long and fragile legs is unknown, but their presence has given the owners their nicknames. The larvae are aquatic and terrestrial; the latter grubs are often called leather-jackets, and are destructive to the roots of crops. The abdomen of the female insect terminates in a long ovipositor.

Crane's Bill, see GERANIUM.

Cragon, genus of decapod crustaceans, belongs to the family Cragonidae. *C. vulgaris* is a very well-known species, as it is the common shrimp found on our shores.

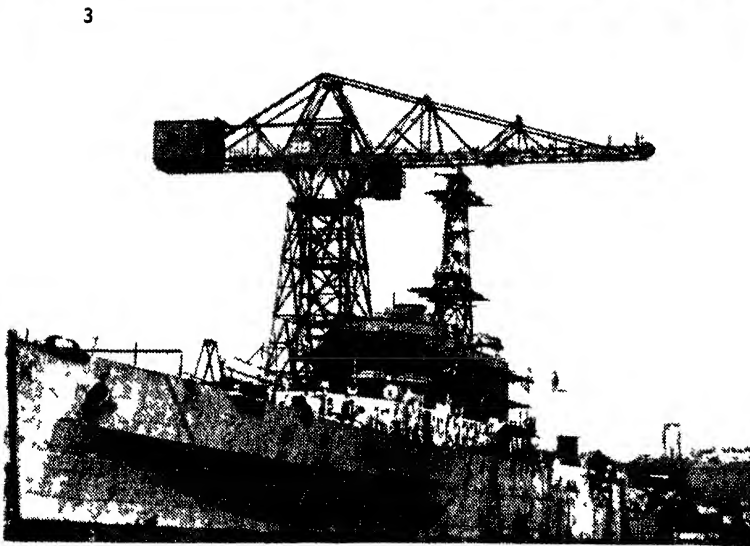
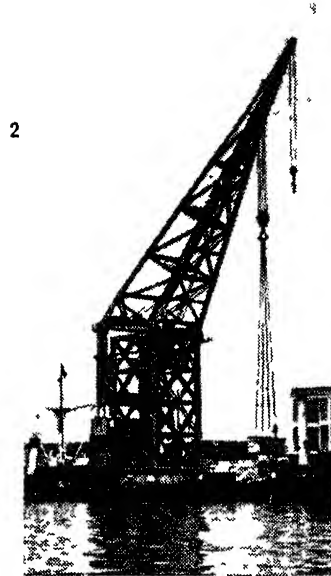
Craniotabes, atrophy of the skull occurring in infancy, resulting from syphilis, rickets, or marasmus. The wasting occurs in small areas, about the size of a shilling, which when pressed with the finger indent and spring back with a crackle as if made of parchment. The condition is now rare in this country owing to the rarity of the diseases which cause it.

Cranium, see SKULL.

Crank, in mechanics, a device consisting of C. arm and C. pin by means of which rectilinear reciprocating motion is changed into rotary motion. The handle of a grindstone is an example of a single C., while the C. of a wheel changes the rectilinear motion of a piston-rod. The bell C. merely changes the direction of rectilinear motion.

Cranleigh, vil. of Surrey, England, 8 m. SE. of Guildford. Here is a public school. Pop. 5500.

Cranmer, Thomas (1489-1556), Archbishop of Canterbury, b. of a good family at Aslacton, Notts. After being educ. under a tutor remarkable, even in those days, for sternness, he was sent in 1503 to



1. Goose necked crane at George V dock; 2. Giant floating crane at the Port of London, 3. Titan crane at the Naval Dockyard, Devonport.

(Photos: Hulton Picture Library)

Jesus College, Cambridge, where he became a fellow. He remained as divinity prof. at this college until 1528. The 'sweating sickness' was then raging throughout the co., to avoid which C. removed to Waltham with two of his pupils. Here he met Fox and Gardiner, to whom, in conversation on the question of Henry VIII's desire for the annulment of his marriage with Catherine of Aragon, he made the remark which was the cause of all his later promotion. His suggestion was that Henry should have recourse to the canonists and univs. rather than to the Pope. Henry immediately commanded him to write a treatise on the subject, and to be prepared to support his position. In 1530 C. was sent on an embassy to Rome, and two years later to Germany. The



THOMAS CRANMER

An engraving after a picture at Lambeth Palace.

Pope made him grand penitentiary of England, and on his Ger. embassy he married the niece of the reformer Osiander, an uncanonical but not illegal proceeding, though he was already high in the Church. He was summoned back to England on the death of Warham to fill the vacant archiepiscopal throne, and, preceded by his wife, he came reluctantly to be consecrated on 30 Mar. 1533. Cranmer's sincere belief in the duty of obedience to the sovereign made him a pliable tool in Henry's hands. In May C. pronounced the king's marriage with Catherine to be void *ab initio*, and that with Anne Boleyn, secretly celebrated the Jan. before, to be valid. Three years later he annulled the marriage with Anne in the same fashion. In 1540 he divorced him from Anne of Cleves, and next year he was instrumental in securing Catherine

Howard's condemnation. Yet, although C.'s frailty led him into culpable compliance with the king's wishes, he was naturally kind-hearted. He opposed the Six Articles, 1539, and did his best to save the lives of Fisher, More, and Anne. He had little to do with the dissolution of the monasteries, though he was connected with the deaths of Frith, Lambert, and other heretics. C.'s chief work was in the direction of the Eng. Reformation. From the beginning he had been zealous for the Bible, and in 1538 it was ordered that a copy should be placed in every church. In 1545 he pub. his *Litany*, almost identical with the one at present in use, which shows his great merit as a master of prose. In 1548 came his *Catechismus*, and in 1550 his *Defence of the True and Catholike Doctrine of the Sacrament*, an attack on transubstantiation. His influence in the compilation of the Prayer Book itself can hardly be over-estimated. On the accession of Mary, C. was brought to trial and deposed from his office of archbishop. Finally he was persuaded to recant. Then at the end courage came to him, and at the moment when he should publicly have proclaimed his recantation, he restated his old position, and deplored his past cowardice. Courageously then on 21 Mar. 1556 he met his death at the stake outside the univ. church at Oxford, first burning the hand which had signed his recantation. See J. Strype, *Memorials of Thomas Cranmer* 1894; W. F. Hook, *Lives of the Archbishops of Canterbury*, 1860-76; A. J. Mason, *Thomas Cranmer*, 1898; C. H. Smyth, *Cranmer and the Reformation under Edward VI.*, 1926; and A. C. Deane, *Life of Thomas Cranmer*, 1927.

Cranmere Pool, boggy pool on Dartmoor, Devon, England, about 7 m. from Chagford. It is known as the loneliest place in England, and in summer months is almost dry.

Crannog (from the Irish *crannog*, a derivative of *crann*, tree or wood beam), an artificial dwelling-site in a lake or on a marsh. The buildings of timber are raised on a platform of tree trunks which is often secured by brushwood to a pile foundation and raised by successive layers of stones or rubble. Notable examples of Neolithic and late Bronze Age date are known in Switzerland and in the Alpine area of Württemberg, the latter sites revealing the farmsteads of the inhabitants. In Britain C.s of the Early Iron Age lake-vils. of Glastonbury and Meare, Somerset, excavated with care over many years, have yielded remarkable specimens of wood turnery and joinery preserved by the constant water-logging of the site. Some Irish C.s, of which about 400 are recorded, appear to date from the Neolithic period and the latter part of the Bronze Age, but many belong to the early Christian era, as do those of SW. Scotland. See also **PILE DWELLINGS**.

Cranston, city of Providence co., Rhode Is., U.S.A., with an area of 29 sq. m. It manufa. textiles, mill machinery, beverages, chemicals, metal products, wood and paper products, fire extinguishers, artificial leather, and plastics. It is the seat

of a state training school, and has a mental hospital. Pre-Revolutionary buildings remain. It was incorporated as a tn in 1754, as a city in 1910. Pop. 55,000.

Cranwell, Lincs, England, situated 6 m. from Sleaford, since 1920 has been noted as the location of the Royal Air Force College, whose purpose is to produce permanent officers for a lifetime career in the general duties, equipment, and secretarial branches of the Service. To-day the entire cost of training, including the cost of uniform, flying clothing, and sports kit, is met from public funds. The course extends over a period of two years and eight months, at the end of which flight cadets pass out, and, in the case of the general duties flight cadets, are awarded their 'wings.' Candidates must possess the required educational qualifications, be Brit. subjects between the ages of 17½ and 19, and must pass medical and flying aptitude tests before final selection is made by the Royal Air Force Selection Board, which is also at C.

Craonne, Fr. tn in the dept of Aisne, 10 m. from Laon. Napoleon defeated the Allies here in 1814, and in the First World War it was the scene of fierce fighting owing to its position in the Chemin des Dames (q.v.) sector. Pop. 140.

Crape, thin transparent silk material, with an unglossed, rough, and wavy surface. It is manufactured by twisting the threads before weaving, without removing the natural gum of the silk, and then either boiling or dressing with a viscous gunny solution, by which the threads are partially untwisted and the characteristic appearance obtained. It is usually dyed black and used for mourning dresses. The Fr. word for C., *crêpe*, is usually used to denote C.-type fabrics other than black mourning silk. *Crêpe de Chine* is a coloured or white fabric made from raw silk; other fabrics used as dress materials are *crêpe georgette* and *crêpe marocain*.

Craponne-sur-Arzon, Fr. tn in the dept of Haute-Loire. It has many old buildings, and manufs. lace. Pop. 3000.

Craps, see DICE.

Crashaw, Richard (c. 1612-49), poet and priest, b. London, the son of Wm C., a puritan clergyman. He was educ. at Charterhouse and Pembroke Hall, Cambridge, and became a fellow of Peterhouse in 1636. In 1643 he left Cambridge, shortly after the beginning of the struggle between king and parliament, and went to the Netherlands. In 1644 he was, in his absence, ejected from Cambridge Univ. by the parliamentarians for refusing to accept the covenant, and deprived of his fellowship. At this time, or soon after, he was in France under the patronage of the exiled Queen Henrietta Maria, and was converted to Rom. Catholicism. In 1646 he gained, through the friendship of the poet Cowley, the patronage of Cardinal Palotta, who found him a post at Rome. He was later, in 1649, appointed as canon to the church of Our Lady of Loretto, and d. there on 21 Aug. of the same year. His prin. sacred poems were pub. in *Steps to the*

Temple, 1646, to which were added some secular poems under the title 'Delights of the Muses.' Later eds., 1648 and 1652, contained additional poems, and others have since been added from MS., while his earlier poems in Lat. and Greek were pub. in 1634 under the title *Epigrammatum Sacrorum Liber*. C.'s poems are of the metaphysical school, and his best work places him in the front rank of Eng. religious poets. A complete ed. of his poems, collated with all existing texts, was pub. in 1927, ed. by L. C. Martin. See R. C. Wallerstein, *Richard Crashaw: a Study in Style and Portical Development*, 1935; and A. Warren, *Richard Crashaw, a Study in Baroque Sensibility*, 1939.

Crassulaceae, natural order of dicotyledons, consist of succulent plants, herbaceous or shrubby, ann. or perennial, which grow in hot, dry, exposed places in the more temperate parts of the Old World. Genera include *Aconium*, *Bryophyllum*, *Cotyledon*, *Crassula*, *Echeveria*, *Sedum*, *Sempervivum*, etc.

Crassus, Lucius Licinius (140-91 bc), Rom. orator. In 95 bc he was elected consul together with Q. Mucius Scaevola, and their legislation concerning Rom. citizenship was among the causes of the Social war. In 92, as censor, he closed all the recently estab. rhetorical schools at Rome. C. is one of the speakers in Cicero's *De Oratore*.

Crassus, Marcus Licinius (c. 115-53 bc), Rom. financier, soldier, and statesman; surnamed *Dives*, 'the Rich.' Obligated to take refuge from the Marian party in Spain (87 bc), he returned with Sulla (q.v.), in whose army he held a command (83-82). The Sullan proscriptions opened for C. the door to enormous wealth: he bought up confiscated estates, trafficked largely in high-quality slaves, and further enriched himself by usury. His financial power lent weight to his political and military ambitions. In 71, as praetor, he crushed the rebellion of Spartacus; in 70 he was consul with Pompey; and in 60 became a member of the triumvirate with Caesar and Pompey (qq.v.). In 55 he was again consul with his former colleague, and received the prov. of Syria for a period of 5 years. Late in the same year he set out for the E., hoping to increase his fortune by plundering those wealthy regions on the excuse of war against the unoffending Parthians. Mesopotamia, and even the temple at Jerusalem, had already suffered from his insatiable greed when, in 53, his army was annihilated by the Parthians under Surenas near Carrhae. C. was taken prisoner and put to death.

Crataegus, hawthorn, family Rosaceae, genus of deciduous trees and shrubs: *C. monogyna*, the hedgerow thorn, and *C. oxyacantha*, the hawthorn, are common in Britain. *C. apiifolia*, *C. crus-galli*, *C. orientalis*, and *C. tomentosa* are exotic ornamental thorns for the garden.

Crataeva, genus of tropical plants, family Cappariaceae. *C. dymandra*, the garlic pear, is an evil-smelling, evergreen, spineless tree of Jamaica; *C. tapia*, the tapia or common garlic pear, is a tree about 20 ft high, and the fruit conveys the

odour of garlic to animals feeding on it; *C. mannelos*, the bilva or mahura, is a small tree with a nutritious and aperient fruit of delicious taste.

Crater, see VOLCANO.

Crater, constellation of the S. hemisphere N. of Hydra and S. of Leo.

Craterus (d. 321 BC), trusted general, friend, and the mentor of Alexander the Great. C. did not fear to rebuke Alexander for his faults or to lay before him the complaints of his soldiers. He commanded the cavalry during the expedition to India and led the veteran army back to Macedonia. Alexander appointed him to succeed Antipater, whose daughter he married, as regent of Macedonia; but on Alexander's death, in 323, C. and Antipater together governed Macedonia, Greece, and Illyria. He helped to defeat the Greeks in the Lamian war, and was killed in combat with Eumenes, his old companion in arms, in Antipater's war with Perdiccas in Cappadocia.

Crates (d. 425 BC), Athenian writer of the Old Comedy. According to Aristotle he initiated the movement away from satirical comedy towards a regular plot. The titles of 10 plays are known, but only fragments of his work survive. See G. Norwood, *Greek Comedy*, 1931.

Crathie, par. in Aberdeenshire, Scotland, among the Grampian Mts. In it is Balmoral Castle, the highland royal residence. Pop. 525.

Cratinus (c. 490–422 BC), Gk comic poet, probably b. at Athens, the son of Callimedes. He was a writer of the Old Comedy and the rival of Aristophanes, over whom he gained sev. victories, and through whom our knowledge of C. is mostly gained. He is credited with various improvements in the arrangement of the chorus and in Gk comedy generally, and is said to have been the first to make comedy an instrument of personal satire. He himself used it as a vehicle for audacious sarcasm, frequently directed against Pericles. The names of 40 comedies by him have come down to us, of which 9 appear to have gained prizes. Among these the chief is *The Wine Flask*, which in 423 gained the first prize, the *Connus* of Ameipsias coming second, and the *Clouds* of Aristophanes third. See T. Kock, *Comicorum Alectorum Fragmenta*, 1880; J. Demianczuk, *Supplementum Comicum*, 1912; D. L. Page, *Greek Literary Papyri*, vol. I (Loeb Library), 1942.

Cratippus, peripatetic philosopher of Mitylene in the 1st cent. BC, chiefly known through allusions in the works of Cicero, his pupil and friend. Plutarch says that he conversed with Pompey on his retreat from Pharsalia. About 48 BC he opened a school of philosophy at Athens, which was attended by Marcus, the son of Cicero, and by M. Brutus.

Crau, La, originally a stony and partially sterile desert in the dept of Bouches-du-Rhône, devoted to the raising of sheep. In recent times irrigation (the Crauponne and Langlade canals) has developed part of it into a prospering agric. dist. It is part of the alluvial delta of the Rhône (q.v.).

Craven, Pauline (1820–91), Fr. novelist, b. Paris, daughter of Comte Auguste Marie de Ferronays and wife of Augustus C., diplomatist. Her *Récit d'une sœur* (trans. as *A Sister's Story*, 1868) is the story, told with great charm, of the sorrows of her family while in Rome and Naples. The book, which was crowned by the Fr. Academy, made so great an impression in France and in England that 9 eds. were pub. in a few months. Her other works include *Le Travail d'une Âme*, 1877; *La Jeunesse de Fanny Kemble*, 1880; *Eliane*, 1882; *Lucia*, 1886.

Craven, a limestone dist. of W. Yorks, England, extending from the sources of the rivs. Wharfe and Ribbles to the Lancs border. The scenery, with its fells and moorlands, is particularly wild and beautiful; Skipton (q.v.) is the 'cap.' of the area.

Craven Arms, vil. of Shropshire, England, 7 m. NW. of Ludlow. The par. church of Stokesay (1 m.) dates from the 17th cent., with a roofed manorial pew; nearby is a 13th-cent. moated castle. Pop. 1400.

Crawfish, see CRAYFISH.

Crawford, Francis Marion (1854–1909), Amer. novelist, b. Lugni di Lucca, Tuscany. He was a son of Thomas C., the sculptor, and nephew of the Gen. Marion who took part in the Amer. War of Independence. He spent the first 11 years of his life in Rome, but was educ. at Concord, New Hampshire, Trinity College, Cambridge, Karlsruhe, and Heidelberg. Returning to Rome he studied Oriental languages, and in 1873 undertook press work at Allahabad for the *Indian Herald*. Falling ill, he went to live in New York with his uncle, Samuel Ward, who was to become the hero of the novel, *Dr Claudius*. Later he travelled in America and Turkey, settling at Sorrento in 1883. His first novel, *Mr Isaacs*, appeared in 1882, and following it (among others) came *Dr Claudius*, 1883; *A Roman Singer* and *An American Politician*, 1884; *Zoraster*, 1885; *Saracinesca* and *Marzio's Crucifix*, 1887; *With the Immortals*, 1888; *Sant' Ilario*, 1889; *A Cigarette Maker's Romance*, 1890; *The Ralstons*, 1894; *Casa Braccio*, 1895; and *A Rose of Yesterday*, 1897. He wrote also a play, *Francesca da Rimini*, produced in Paris in 1902, and a historical work, *Ave Roma Immortalis*, 1898. See M. H. Elliott, *My Cousin, Francis Marion Crawford*, 1934.

Crawford, Joan (1908–), Amer. actress, b. San Antonio, Texas. She began her professional career as a dancer under the name Lucille Le Sueur in Ernie Young's revue in Chicago; after other stage shows she made her first film appearance in *Pretty Ladies*, 1926. She began starring roles in silent productions, and has remained a star ever since, though she has long since forsaken dancing in favour of dramatic roles. She won an Academy Award for the best performance by an actress in 1945 (*Mildred Pierce*).

Crawford, Osbert Guy Stanhope (1886–), archaeologist and anthropologist. Archaeology Officer of the Ordnance Survey, 1920–46, in which capacity he greatly

improved the archaeological information on ordnance survey maps and was responsible for the first production of the now well-known ordnance survey period maps. Has pub. many papers and sev. books on various archaeological subjects, and is an expert in air photography as applied to archaeology, in which matter he was a pioneer. Founder and editor of *Antiquity*, a highly successful quarterly review of archaeology, 1927 and in progress. His most recent book, *Archaeology in the Field*, 1953, is well recommended.

Crawford, Robert (1700-33), poet, b. Edinburgh. He contributed lyrics to

of the Scottish family of Lindsay. The first of this name to settle in Scotland seems to have been *Waller de Lindsay*, an Anglo-Norman baron of the reign of David I. Becoming rapidly influential, and spreading from their original homes at Ercildoun, Roxburghshire, and Crawford in Clydesdale to Haddington, Forfar, Fife, etc., the Lindsays figured conspicuously in the hist. of Scotland. Their name occurs frequently in the accounts of the feuds between the Scottish nobles; the doings of 'the Lindsays light and gay' are commemorated in the ballad of the battle of Otterbourn, and Froissart refers to the adventures of *Sir John Lindsay* in the



John H. Stone

STOKESAY CASTLE, SHROPSHIRE

Allan Ramsay's *Tea Table Miscellany*, and his work was praised by Burns. He is chiefly remembered for his songs, such as 'Tweedside' and 'The Bush aboon Traquair,' many of which were pub. in the *Orpheus Caldonius*. He was drowned while returning from France.

Crawford, Thomas (1813-57), Amer. sculptor, b. New York city. In 1834 he settled in Rome and studied under Thorwaldsen. He estab. his reputation by a statue of Orpheus for Boston in 1839. He executed also statues of Washington and Beethoven; a figure of Liberty; a bas-relief, 'The Progress of American Civilization,' etc. He became blind in 1854, and d. in London. See L. Tait, *The History of American Sculpture*, 1924.

Crawford and Balcarres, Earls of, title

same battle. Another famous member of the family was *Sir David Lindsay* of Glenesk, who was created Earl of Crawford in 1397. He married Princess Elizabeth, daughter of Robert II, and is the hero of the tournament against Lord Welles described in Wyntoun's *Cronykill*. *Alexander* (d. 1454), the fourth earl, was famed for his violent and ferocious character, and was surnamed the Tiger Earl; he was also known as Earl Beardie. He became hereditary sheriff of Aberdeen, a dignity of which he was later deprived by James II; and his estates were forfeited for an attempt, in concert with other Scottish nobles, to dethrone the king. *David*, the fifth earl, became very powerful and was created Duke of Montrose in 1488 for his support of James III

against the rebellious barons. The title of duke had never before been conferred upon a Scot not of royal birth. He was besides hereditary sheriff of Angus, keeper of Berwick, high admiral, master of the household, lord chamberlain, joint high justiciary, and was employed on important embassies to England.

Alexander, the ninth earl, won by his crimes and misdeeds the title of the Wicked Master of Crawford, and forfeited his title, which passed to David Lindsay of Edzell, but, David dying without issue, the son of the wicked earl succeeded to the title in 1558. In the Reformation struggles the elder branch of the Lindsays took the Catholic side, and their implication in these contests and as royalists in the great civil wars of Mary and James VI brought about their ruin and the succession to the earldom of the Byres branch of the family. *John*, sixth Lord Lindsay of the Byres, was a Protestant and a man of iron character, who helped to compel Mary to resign her crown. His grandson *John* was high treasurer of Scotland, and his great-grandson *William* was president of the Parliament after the revolution of 1688, and leader of the party who overthrew the episcopacy. *John*, the twentieth earl, served with the imperial army under Prince Eugene, then in Russia and Turkey. In 1747 he was appointed to the command of the Scots Greys, became lieutenant-general, and fought with distinction at Dettingen and Fontenoy.

The earldom reverted to the earls of Balcarres on the death (1808) of the twenty-second earl. The title was not assumed by them, however, until 1848, when James, the 7th Earl of Balcarres, established his claim to it before the House of Lords. *Alexander William Crawford Lindsay*, 25th Earl of Crawford and 8th Earl of Balcarres (1812-80), was well known as a writer on religious art and on philosophy, etc. He was also the founder of a magnificent private library at Haigh Hall, Lancs, in which the literatures of all nations were represented. He was succeeded by *James Ludovic*, his son, who became twenty-sixth earl. His son, *David Alexander Edward Lindsay* (1871-1940), succeeded to the title in 1913. He was for many years Unionist Whip in the House of Commons, where he sat from 1895 to 1913, and held a number of ministerial posts. He was succeeded by his son, *David Alexander Robert Lindsay* (b. 1900).

Crawfordsville, city, co. seat of Montgomery co., Indiana, U.S.A., on Sugar Creek, 45 m. NW. of Indianapolis in agric. area. It manufactures steel and wire, foundry products, and farm implements. Wabash College for men is here. Pop. 12,900.

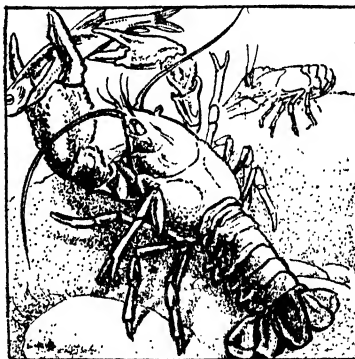
Crawford, Thomas (c. 1530-1603), Scottish soldier, who was taken prisoner at the battle of Pinkie, 1547, and afterwards helped in bringing the murderers of Darnley to trial. He took Dumbarton Castle in 1571, and forced Edinburgh Castle into surrender, 1573.

Crawl, racing stroke in swimming (q.v.).

Crawley, Aldan Merivale (1908-), political commentator, educ. at Harrow and Oxford. He was a journalist before the Second World War; during the war he served in the R.A.F. and was a prisoner-of-war in Germany 1941-5. From 1945-51 he was Labour M.P. for Buckingham. After losing his parl. seat he became famous for his broadcasts and television commentaries on political affairs and industrial problems. In 1955 he became Editor-in-Chief of Independent Television News Ltd.; his resignation in 1956 caused considerable comment. He has since left the Labour party and resumed his career as a free-lance commentator.

Craeyr, or **Craeyer**, **Caspar de** (1584-1669), Flem. painter, b. Antwerp. He was a follower of Rubens and Van Dyck. His chief works were altar-pieces for various churches in the Netherlands, and include 'Christ appearing to the Magdalen', in the church of Notre Dame at Brussels, and 'The Assumption,' in Ghent cathedral.

Crayfish, or **Crawfish**, name given to sev. species of decapod crustaceans which



CRAYFISH

are very closely allied to the lobsters. All are fresh-water animals, and the only marine crustacean to which the term is ever applied is *Nephrops norvegicus*, the Norwegian lobster, which is not a true C., but a lobster. C. are nocturnal in habit, omnivorous in diet, and they undergo a series of moults before the perfect creature is formed. C. may be found in the rivers and streams of England, especially in limestone districts. They make small burrows in the banks where they remain during the daytime, away from the light. The name crayfish is also given to the spiny-lobster, *Palinurus*, a marine genus.

Crayford, urb. dist. of Kent, England, on the R. Cray, now a dormitory area for London, and largely industrial in character. It was the probable site of a Roman station on Watling Street; in 457 AD Hengist won a victory here over the Britons. The par. church of St Paulinus

dates from Norman times. There are playing fields at Mayplace (93 ac.), recreation grounds at Martens Grove (27 ac.), and a park at Shenstone (19 ac.). Pop. 27,950.

Crayon Drawing, see PASTEL.

Crazy-bone, see FUNNY-BONE.

Crazy Widow, see COURLAN.

Cream, see BUTTER.

Cream-Coloured Ware, fine lead-glazed earthenware invented in Staffordshire about 1760 and perfected by Wedgwood in his 'Queen's Ware,' so called because of the patronage he received from Queen Charlotte about 1765. See EARTHENWARE, *European*; WEDGWOOD.

Cream of Tartar, or Potassium Bitartrate (CaH₂O₄K), substance occurring in a crude form in the later stages of the fermentation of grape-juice. This product is known as 'argol,' and is found deposited on the sides of the cask in which the fermentation has taken place. It is dissolved in hot water, the solution is filtered, and the pure C. of T. crystallised out. C. of T. is used in medicine as a purgative, and is often used as the acid element in baking powder.

Creameries. Until the middle of the 19th cent., butter-making was carried out entirely by the farm on which the milk was produced. In Ireland, which has always been primarily an agric. country, Sir Horace Plunkett inaugurated a co-operative movement among farmers which would enable them to market their produce on a more business-like and profitable basis. Plunkett had gained first-hand knowledge of farming while ranching as a young man in the W. states, and the Irish Agric. Organisation Society, which he founded in 1894, became a great success; he was later, 1900, made vice-president of the Dept. of Agric. and Technical Instruction in Ireland. Although he experienced the utmost difficulty in establishing the first creamery in the country, to-day there are well over a thousand throughout Ireland. The Eng. Agric. Organisation Society was based on the I.A.O.S. To-day comparatively little butter is made on Brit. farms, and its price is always in advance of that of creamery butter. C. also act as collecting and distributing centres for milk, and have pasteurising and bottling plants. 'Clouted cream' (clotted, or *salded*) is made chiefly in Devonshire, Somerset, and Cornwall. There are numerous C. in New Zealand, Australia, and Canada, and much of the butter production of these countries takes place in them. The total output of butter in 1954 was: New Zealand and Australia about 3,830,000 cwt each, and Canada 2,985,000 cwt. However, New Zealand has the largest export trade, and this amounted to 2,658,000 cwt, most of which came to Britain.

In the U.S.A. C. are most numerous in the corn belts, and respond to winter as well as summer dairying, whereas the cheese factories are estab. chiefly in the cooler parts of the dairying region of Wisconsin, and are useful mainly in absorbing the extra supply of summer

milk. A cheese and butter factory combined was estab. in Orange co., New York, in 1851, but the first actual creamery dates from 1872 in Manchester, Iowa. In some of the great Amer. C. machinery is estab. which can manuf. millions of pounds of butter every year. An average of over 1,800,000,000 lb. of farm and factory butter is produced yearly. The *Dairy and Creamery Journal* was estab. in London in 1889. See also DAIRY; DAIRY FACTORIES.

Creanga, Ion (1837-39), Rumanian author. Of peasant origin, he was trained as a priest against his will, and as a schoolteacher, and only started to write on Eminescu's (q.v.) encouragement. His works—fables, recollections, and stories—are founded on peasant life and legend and his vigorous style is equally founded on peasant language, though it is considerably polished. An Eng. trans. of his recollections (with 4 stories) appeared in 1930 and a selection of his stories, *Folk Tales from Rumania*, in 1952.

Creasy, Sir Edward Shepherd (1812-78), historian, b. Bexley, Kent, and educ. at Eton and King's College, Cambridge. He was called to the Bar in 1837, and served as assistant-judge at the Westminster Sessions Court. In 1840 he was appointed prof. of hist. at London Univ., and from 1860-70 he was chief justice of Ceylon. He was knighted in 1860. His chief works are *The Rise and Progress of the British Constitution*, 1834; *The Fifteen Decisive Battles of the World*, 1851 (his most outstanding work, which has become a classic); and *Invasions and Projected Invasions of England*, 1852.

Creation, in Christian theology, the act whereby God, the Infinite, brought all finite things, material and spiritual, into existence out of nothing, and sustains them in being continually. Time itself is a creature. The act of C. is therefore outside time and beyond the scrutiny of natural science. This means that the doctrine of C. is not directly affected by scientific theories about the origin and age of the cosmos, and even of continuous creation. It is important to note that C. involves not only the original production of the Universe and all it contains (with any other Universe that there may be) but also its maintenance and direction from moment to moment. God is not only the remote first cause of every being, but the immediate ground of its present existence, and all the laws of nature proceed from him. The theory of evolution as the process whereby the varieties of living creatures were produced, is therefore compatible with C. at any rate so far as physical life is concerned. Spiritual being does not fall within the province of natural science, but of religion and philosophy, both of which assure us that the rational soul cannot be derived from matter or material processes. While, therefore, it may be true that man's physical nature (and even some of his sub-rational and instinctive activities) have been gradually evolved, the imparting to man of a rational soul, whereby he became *Homo Sapiens* (see ADAM), was

a fresh creative act (and still is such at every human conception). (See also SOUL, and, for the teaching of the Rom. Catholic Church, the encyclical *Humani Generis*, 1950.) During the 19th cent. the theory of Evolution raised much controversy with Christian teachers, because it apparently conflicted with the account given of the C. in the book of Genesis and so with the inspiration and truth of Scripture. Great advances however have been made both in biblical studies and in our knowledge of primitive literature, which show that the controversy was due to a misinterpretation of the early chapters of Genesis. These had been taken as a factual and historical

dispute). Christians known as fundamentalists, however, accept the Genesis story as literally inspired and true in every detail. For these the conflict with science is acute. See also COSMOGONY and COSMOLOGY; also C. Gore, H. L. Goudge, and A. Guillaume, *A New Commentary on Holy Scripture*, 1928.

Crébillon, Claude Prosper Jolyot de (1707-77), Fr. novelist and dramatist, b. Paris, the son of Prosper Jolyot de C.; educ. at the Jesuit College of Louis le Grand. He began by writing for the stage, but later took up fiction. In 1748 he married Lady Stafford, an Englishwoman. In 1755 he became censor. He



Anderson

MICHELANGELO'S, 'THE CREATION OF MAN'

A detail from the Sistine chapel of the Vatican, Rome.

record, instead of being read as the prehistoric lore, inspired with theological truth, that they are. As prehistoric myth or legend they have close parallels with similar narratives elsewhere, notably those of Mesopotamia of which we now possess a number of versions. But as documents inspired with theological truth they are in striking contrast with the other C. myths, lacking as these are in moral, spiritual, and psychological insight, and full of a gross polytheism. The task of disentangling the theological truth contained in Genesis from the popular lore that is its vehicle is the duty of the proper authority that God has provided (whether this be the Church or the Christian individual, is the Catholic-Protestant

seems to have disappeared some time before his death. His novels, which include *Le Sopha*, 1745 (Eng. trans., 1781), for the indecency of which he was banished from Paris, *Lettres de la Marquise de . . .*, 1732, and *Les Égaréments du cœur et de l'esprit*, 1736, are clever but licentious. *Ouvrages complètes*, 1772. See A. Huxley, *Crébillon the Younger (Essays New and Old)*, 1926.

Crébillon, Prosper Jolyot de (1674-1762), Fr. dramatist, b. Dijon; intended for the law, but persisted in writing, and at an early age produced the tragedy *Idoménée*, which was very successful. He continued to write tragedies on classical subjects in rapid succession: *Atreé et Thyeste*, 1707; *Electre*, 1709; and *Rhadamiste et Zénobie*,

1711, his masterpiece. His plays are full of gruesome violence, written in a style often too forced. In 1711 he lost his wife, and after her death lived in retirement for some years, much of the time in considerable distress from poverty. Later, however, his previous work was recognised by a place in the Fr. Academy and the position of police censor, and his new comfortable circumstances allowed him to recommence writing. In 1748 *Catiline* appeared, and was produced under court patronage in the presence of the king. *Le Triumvirat*, 1755, was only moderately successful. His last play, on Cromwell, was never completed.

Crécy (*Crécy-en-Ponthieu*), or *Cressy*, vil. of France, in the dept of Somme, 12 m. NE. of Abbeville, noted for the battle of 1346 (see below). Pop. 1300.

Crécy, Battle of, fought on 26 Aug. 1346, in which Edward III of England decisively defeated Philip VI of France.

Edward invaded France through Normandy, crossed the Seine, and then forded the Somme, which Philip, who was on the E. bank, had hoped to make his battle line. The Eng. formed in battle order on a wooded hill between Wadicourt and Crécy (q.v.), all on foot, the Welsh archers at the front. The Fr. nobles were impatient for victory. Their army was numerically superior to that of the Eng. and they insisted on joining battle immediately, even though, tradition says, their archers' crossbows had been dampened by a recent shower, and the wooded country was clearly unsuitable for a mounted charge.

In the result, the Fr. cavalry were cut to pieces by the Eng. longbowmen and spearmen. They fought bravely, but their repeated charges only increased their casualties, said to have been heavy, and by sunset they were beating a disorganised retreat. The engagement was the first major action of the Hundred Years' War (q.v.). In it the superiority of the Eng. military machine, with its reliance on a professional infantry of longbowmen and spearmen, was clearly demonstrated. For a contemporary source see *Froissart's Chronicles*; see also A. H. Burne, *The Crécy War*, 1955.

Credence, name for small table which stands within the chancel rails, beside the altar, on which stand the elements and sometimes the vessels for the Eucharist. The term was formerly used in social life to designate a side table on which were placed the dishes before being served at the general table. At this side table the different foods were tasted as a precaution against poison in Italy, France, and Germany about the 15th cent.

Credentials, instruments which an ambas., envoy, or other diplomatic agent receives from his own gov. authorising him to appear in his diplomatic character and defining his powers. The C. are usually in the form of a closed letter addressed to the sovereign or head of the gov. of the state to which the officer is accredited.

Credi, Lorenzo di (c. 1458-1537), It. painter of the Tuscan school, b. at

Florence, and a fellow pupil with Leonardo da Vinci under Andrea Verrocchio (q.v.), of whom he made an excellent portrait (Uffizi). His style and choice of subject remained uninfluenced by the pagan side of the Renaissance, and he burnt some of his pictures in the famous bonfire under the influence of Savonarola, who had arranged the so-called 'burning of the vanities' (1497). A capable minor master, he excelled in madonnas and holy families, and was particularly fond of painting children. His best works include 'The Nativity' in the academy at Florence; 'The Madonna and Child' in the Louvre, Paris, which Vasari considered his masterpiece; 'The Virgin and Child' in the National Gallery; and 'The Holy Family' at Edinburgh. He shows the influence of da Vinci very strongly. See Sir E. J. Poynter, *Classic and Italian Painting*, 1882, and G. Vasari, *Lives of the Painters*.

Credit, in a commercial sense, the undertaking on the part of one party to a contract to pay money at a future time to the other party, who gives valuable consideration for that undertaking, e.g. in the presenting of bills of exchange drawn on third parties in payment for goods sold, by one merchant to another for exportation. The merchant taking the bill of exchange does not wait for payment to fall due on it, but gets it discounted at a bank. Thus, having given C. to one person in goods, he obtains C. from another in money. Commerce could not be carried on without C. The extensive part which C. plays in the circulation of capital and the production and exchange of wealth is one which will be found discussed in all the text-books on economics. The precise use of C. as an agent in the production of wealth is that it gives circulation to capital (q.v.) and renders it available wherever it can be most profitably employed. See also BILL OF EXCHANGE; CAPITAL.

Credit, Letter of, order, open or sealed, given by bankers or others at one place, to enable a person to receive money from their agents at another place. The person who obtains a L. of C. may go to a particular place and need only carry with him a sum sufficient to defray his expenses. The L. of C. gives him some of the advantages of a banking account when he reaches his destination, as he may avail himself of it for part only of the sum named in it. A L. of C. is not transferable, and is said to be 'special' when addressed to a particular individual by name, requesting him to advance money to the bearer of the L. of C. Travellers' cheques are a form of L. of C.

Credit, Social, see SOCIAL CREDIT; ABERNATHY, WILLIAM.

Credit Foncier, institution founded in France by the economist Wolowski, and created under gov. patronage by a decree issued in 1852, to enable landowners and owners of house property to obtain money on mortgage of real securities at a low rate of interest, the loans to be repayable by annuities, including redemption of capital. The C. F. is really the name adopted subsequently on the amalgamation of the three original mortgage banks of Paris,

Nevers, and Marseilles. Its operations and area of activity have been frequently extended since its formation, and in 1860 it was empowered to make advances to municipalities and depts for public works and improvements. The control of the gov. over the C. F. is exercised by the appointment of the governor and two deputy governors, and by the rule that the approval of the governor is required to validate the decisions of the directors. The C. F. possesses under its charter, which has been extended for a period of 99 years from 1881, the right to issue bonds at a fixed rate of interest repayable in 50 or 60 years, and, where specially authorised, carrying a right to draw for prizes.

Credit Insurance, form of commercial insurance indemnifying the insured in respect of losses arising from the insolvency of his debtors, or their failure to pay admitted or estab. debts within 90 days of due date. Losses may be in respect of moneys owing to the insured by the debtors for delivered goods or, in certain circumstances, in respect of contingent liabilities. Policies may cover the whole of an insured's business during a stated period or certain specified transactions only, subject to admission by the insurers. For the export trade policies are available through gov. institutions, or with gov. backing, to include in the indemnity losses arising from risks of a political nature which are beyond the scope of private enterprise. The indemnity under a C. I. policy is never in respect of 100 per cent of a loss, but usually from 75 per cent to 85 per cent, the balance being borne by the insured. Contracts for the issue of C. I. policies are within the Statute of Frauds and must, therefore, be in writing. They are also contracts *uberrimæ fidei* and so require full disclosure by the applicant of all material facts, falling which the contract is voidable. In general this covers any fact affecting the quality of the risk, such as the terms of credit and the apparent financial standing of the debtor in so far as this is known to the applicant. During the currency of a policy the insurers are discharged from liability, generally speaking, if the insured, without their agreement, consents to any alteration in the terms of liability of a debtor. This does not refer, however, to liability in so far as the amount of credit allowed is concerned, the insurer's limit of liability being agreed in advance in respect of each debtor and any excess over such limit in individual cases being the responsibility of the insured.

Crédit Mobilier: 1. Institution formed simultaneously with the *Crédit Foncier* in 1852 in France for making advances on the security of personal or movable (*mobilier*) estate. It was taken over in 1932 by the *Banque de l'Union Parisienne*. The C. M. of London, which was formed in 1864, was ultimately absorbed in the *Crédit Foncier* of London.

2. The C. M. of America was a construction company which, having obtained the contract to construct the Union Pacific

Railroad, caused one of the gravest scandals in the hist. of Amer. politics by the nature of its financial operations after the railroad company's stock-holders had acquired the controlling interest in its bonds.

Crediton, or **Kirton**, mkt tn of England, in the co. of Devon. It is situated on the R. Creedy, 8 m. NW. of Exeter, lying in a narrow valley between two steep hills, and is divided into an old and new tn. It was the bp. of Winfrid, or St Boniface, in 680, and from 910 to 1049 was the seat of a bishopric, afterwards transferred to Exeter. The par. church is interesting and dates from the Norman period. Cromwell captured C. in 1645; in 1743, and again in 1769, much of the tn was destroyed by fire, consequently it is fairly modern in appearance. Agriculture is the prin. industry, but there are also sweet, medicinal lozenge, and cider factories, and eccles. woodwork is made. Pop. 4140.

Crech, Thomas (1659-1701), poet and translator, b. Blandford, Dorset. He trans. into Eng. verse Lucretius's *De Rerum Natura*, 1682; *The Odes, Satyrs, and Epistles* of Horace, and *The Idylls* of Theocritus, 1684. He is best known for his trans. of Horace.

Creed (from Lat. *credo*, I believe, the first word of the Apostles' and Nicene C.s), the authorised summary (or symbol) of the faith of a Church, generally used liturgically. The three great C.s of the Church are very early in date, and of only one of them is the origin at all clearly known. The *Apostles' C.*, the simplest and earliest, has the most complicated hist. In the 4th cent. Rufinus traced it to the Apostles themselves, each of whom he declared to have had a share in its composition. This tradition, however, is generally disregarded. Certainly some form of baptismal confession was required at a very early date, and the nucleus of this is found in Christ's command to baptise 'in the name of the Father, and of the Son, and of the Holy Ghost.' This formula was expanded into a short form, common to E. and W., with the same three sections as the present C., but lacking many details, such as 'He descended into hell' and 'the Communion of Saints,' which are first found in the Gallican formulae of the 5th cent. In the E. this common C. was much modified and expanded in various ways according to the heresy it was required to combat at the moment. In the W. the most important step in the development is the Rom. symbol, which has been reconstructed with substantial agreement by various authorities. Before this Irenæus, Tertullian, and Hippolytus show earlier forms of baptismal confession, all with the same type of construction. The present *Apostles' C.* is a compound of Rom. and Gallican forms deriving its authority from Catholic consent. The hist. of the *Nicene C.* (q.v.) is more definite. It was promulgated at the ecumenical council convoked by Constantine at Nicæa in 325 to settle the Arian controversy. The heresy of Arius (q.v.)

which made Christ a creature, however supreme, was excluded by the adoption of the unscriptural expression 'of one substance with the Father' to define the scriptural truth of Christ's divinity, and distinction from, yet union with, the Father within the one Deity (see CONSUBSTANTIAL). At the Council of Constantinople (381) some additions were made, the divinity of the Holy Ghost being stated. Except for one clause, the *filioque* (q.v.), declaring the procession of the Holy Ghost to be 'from the Father and the Son,' the C. was now in the form in which we know it in the W. The *Athanasian C.* probably dates from the 5th cent. The C. is an elaborate statement of the doctrine of the Trinity. It expounds the faith of Athanasius (q.v.) but has no direct connection with him. It is in fact not a C. so much as a hymn or psalm, as is shown by its concluding *Gloria*. Since the Council of Trent, the *Professio Fidei Tridentina*, issued in 1564 (amended 1870), commonly known as the 'C. of Pope Pius,' has practically assumed the rank of a C. in the Rom. Church. See C. A. Swainson, *The Athanasian Creed*, 1870; and *Nicene and Apostles' Creeds*, 1875; C. G. A. Harnack, *The Apostles' Creed* (trans.), 1901; and C. Barth, *Credo* (trans.), 1936.

Creeks, a confederacy of Amer. Indian tribes, built around a tribe called Muskoogee, in Georgia and Alabama. They were famous mound builders (q.v.) and practised a very elaborate ritual. In 1813-14 they were defeated by Andrew Jackson; in 1825 they were transferred to the Indian Ter.; and they became Amer. citizens in 1906. They number about 12,000.

Creeper, see CLIMBING PLANTS.

Creeper, name often applied to any small bird which seeks its food by running on the ground, but more properly applied only to the family Certhiidae, order Passeriformes. They have long, slender bills and dull plumage. The tail is somewhat long and square, and the feet slender.

Crees, important tribe of N. Amer. Indians of Algonquian linguistic stock. They number about 10,000, living in the region to the W. of Hudson's Bay. They were long known as guides and hunters for the fur traders, and their usefulness seems to have prevented the destruction that overtook so many Amer. Indian tribes.

Crestown, seaport forming part of the par. of Kirkcubrecht, in Kirkcudbrightshire, Scotland, at the mouth of the R. Cree. Salmon fishing is carried on, and industries include the Solway Pre-Cast factory, quarrying, and aggregate bricks. Pop. 900.

Creevey, Thomas (1768-1838), politician and diarist, b. Liverpool of Irish descent, and educ. at Queen's College, Cambridge. He entered Parliament as a Whig in 1802. He held a number of minor offices, and in his old age was treasurer of Greenwich Hospital, when he was described by Charles Greville as 'perfectly happy and exceedingly poor.' He is remembered,

however, as the author of the historically valuable C. Papers. C. bequeathed to his stepdaughter all his papers—letters, diaries, etc.—and selections from these were first pub. in 1903. Whilst they are of no great literary worth, they are of considerable interest to the student of late Georgian politics. C. knew almost all the prominent personalities of his day, and their characters as well as the social life of the period are vividly reflected in these papers. See H. Maxwell (ed.), *The Creevey Papers*, 1903; J. Gore, *Creevey's Life and Times*, 1934; (ed.) *Creevey*, 1949.

Crefeld, see KREFELD.

Creighton, Mandell (1843-1901), bishop and historian, b. Carlisle, and educ. at Durham and Merton College, Oxford. He was made Bishop of Peterborough, 1891, and Bishop of London, 1896. In 1882 he pub. the first two vols. of his *History of the Papacy*, and was appointed Dixie prof. of eccles. hist. at Cambridge in 1884. Three more vols. of this work appeared before 1894. Its historical judgement, impartiality, and widely accurate scholarship are universally acknowledged, and it remains a standard work on the subject. He founded the *English Historical Review* in 1886, and ed. it for 5 years. The following are among his other works, though these are now less widely read: *Life of Simon de Montfort*, 1876; *The Tudors and the Reformation*, 1876; *Cardinal Wolsey*, 1888; and *Queen Elizabeth*, 1896. See L. Creighton, *Life and Letters of Mandell Creighton*, 1904.

Creil, Fr. tn in the dept of Oise, on the Oise. It has a 12th-15th cent. church. It is an important railway junction, and manufs. rolling-stock, machinery, chemicals, pottery, and glass. Pop. 10,000.

Crema, It. tn in Lombardy (q.v.), on the Serio, 27 m. NW. of Cremona (q.v.). It has a 13th cent. Romanesque-Gothic cathedral, and manufs. textiles, millinery, and church bells. Pop. 28,000.

Cremation, reduction to ashes of human corpses. At the present day, when there are over 90 crematoria in the U.K. and many more under construction or under contemplation, it is difficult to realise that towards the end of the 19th cent. popular sentiment was either so hostile or so apathetic to this mode of burial that not one crematorium existed in England, and very few abroad. On its religious side that sentiment has not passed, and the Cremation Act, 1902, expressly exempts any minister from the obligation to perform a burial service at or after the C. of remains. On the Continent C. is by no means estab.; e.g. it was not until 1931 that it was legalised in Belgium. It prevails mainly in Japan, where there are over half a million C.s annually. In 1957 the number of C.s in Great Britain exceeded 150,000. There were over 150 crematoria in N. Amer. and sev. hundred in Europe. C. is by no means a modern practice, except in regard to the scientific process employed; it was the common custom among most of the natives of the anc. world, except Egypt, where embalming was in vogue, and China, where interment in the soil of that country was so

involved with religious notions that it was and remains essential to send corpses to China wherever the death may have occurred. It is chiefly due to such It. chemists and physicians as Polli and Brunetti that the whole question of C. began to be discussed in Europe in the middle of the 19th cent. In England the matter was never really before the public until Sir Henry Thompson (author of *Modern Cremation: its History and Practice to the Present Date*, 1901), in 1873, having conducted experiments with both regenerative and reverberating furnaces according to the It. processes, demonstrated the possibility of resolving a corpse into gases with rapidity and efficacy. The result was the formation in 1874 of a society for the promotion of C., with Sir H. Thompson as its president. In 1878 the society bought a site at Woking, but, owing to the opposition of the Home Office, the society was obliged to abstain from any attempt at practising C. In 1884, however, the legality of C. was estab. in a rather curious manner. At the Cardiff assizes in Feb. of that year, a man was indicted for attempting to burn the body of his child instead of burying it. Mr Justice Stephens directed the jury that to burn a dead body instead of burying it was not an offence unless it was done so as to amount to a public nuisance. After this the society, having acquired further funds, announced its intention to perform C., and other crematoria were soon estab. It was not until 1902 that the Act of 2 Ed. VII, c. 8 was passed to legalise and regulate C.s. By this Act burial authorities, including local authorities, maintaining a cemetery under the Public Health (Interments) Act, 1879, may provide and maintain crematoria. No crematorium may be constructed nearer to any dwelling-house than 200 yds without the consent of the owner or occupier, or within 50 yds of the highway, or in the consecrated part of the burial ground of any burial authority. Regulations were laid down by the home secretary in 1903 providing that no C. may take place until the death of the deceased has been duly registered and the written authority of the medical referee appointed for the crematorium has been obtained. The two ordinary processes of C. are carbonisation in a reverberating furnace, the body being resolved into lime dust by the direct contact of the fire, and the noxious effluvia consumed in a second or outer chamber; and that of the Siemens regenerative or hot-blast furnace, in which the combustible gases from the body itself meet hot air or gas generated in another furnace. See F. C. Fidler, *Cremation* (with bibliography), 1930; P. H. Jones and G. H. Noble, *Cremation in Great Britain*, 1931.

Cremer, Sir William Randal (1828-1908), politician, b. Fareham, Hants, was first apprenticed to the shipbuilding trade, but afterwards became a carpenter, and founded the Amalgamated Society of Joiners. The Inter-Parliamentary Conferences on Peace and on Arbitration were

founded by him, and he acted as secretary to the International Arbitration League for 35 years. In 1903 he was awarded the Nobel peace prize. See life by H. Evans, 1909.

Cremerieux, Isaac Moïse, called Adolphe (1796-1880), Fr. lawyer and statesman, b. Nîmes. After the *coup d'état* of 1851 he was arrested and imprisoned, but became minister of justice in the Gov. of National Defence, 1870. He resigned in 1871, and was afterwards made senator for life of the national assembly. C. was also president of the Universal Israelite Alliance. A selection of his speeches was pub. in 1869, and he helped to compile the *Code des Codes*, 1835.

Cremona, *see* KREMNITZ.

Cremona, Luigi (1830-1903), It. mathematician, b. Pavia. In 1860 he was appointed prof. of higher mathematics in Bologna Univ., and was called to the chair of higher mathematics in the univ. of Rome in the year 1873. He was vice-president of the Senate in 1897, and minister of education in 1898. He wrote sev. works, the most noteworthy being *Le Figure reci proche nelle Statica grafica*, 1879, and *Elementi di Geometria proiettiva*, 1873 (trans. into French in 1875).

Cremona: 1. Prov. of Italy, in S. Lombardy (q.v.). It is part of the plain of Lombardy, and is watered by the Po (q.v.) and its tribs. the Adda (q.v.) and the Oglio. It produces silk and other fabrics, cereals, rice, and wine. The prin. tns include C. Soresina, Crema, and Casalmaggiore (qq.v.). Area 690 sq. m.; pop. 378,000.

2. It. city, cap. of the prov. of C., on the l. b. of the Po, 48 m. SE. of Milan (q.v.). It was colonised by the Romans, c. 218 BC, to command Cisalpine Gaul (q.v.). It was destroyed by Vespasian in AD 70, by the Goths in 540, and by the Longobards in 605 (qq.v.). It passed into the possession of the Visconti (q.v.) in the 14th cent. In 1535 it came under Sp. control, in 1814 it became Austrian, and in 1859 It. It has ant. walls, a cathedral (begun 12th cent.) containing fine paintings, tapestries, and sculpture, and a lofty (396 ft) 13th-cent. belfry. St Michel's church dates from the 7th cent., and there are many other beautiful old churches, as well as palaces, museums, libraries, and picture galleries. In the 16th-17th cents. C. produced a notable school of painters. In the 16th-18th cents. it was greatly celebrated for its violins (*see* VIOLIN), and these instruments are still manuf. There is a large trade in the produce of the Po valley, and there are silk, confectionery, and foodstuff (*torrone*) industries. Pop. 69,000.

Cremona Gardens, popular place of amusement in Chelsea, London, from c. 1825 until it was closed in 1877, and named after a former owner of the property. It provided summer evening entertainments and fêtes for charitable purposes.

Creodonts, the earliest and most primitive group of carnivores. They had long, low skulls with small braincases, and lived in Paleocene and Eocene times.

Creoles (derived from Sp. *criar*, to create), strictly the natives of the W. Indies, S. America, and S. U.S.A., descended from the original French, Spanish, or Portuguese, as distinguished from offspring of mixed races (mulattoes, quadroons, mestizoes), or non-lat. stock, and from negroes and aborigines. The name accordingly does not imply a coloured race, and the term is often wrongly used for negroes and others.

Creon: 1. King of Corinth, burned to death when his daughter, Glauce, put on the incendiary garment sent to her by Medea because she had married Jason.

2. Son of Menoeceus and brother of Jocaste, the wife of Laius, governed Thebes for a short time after the death of Laius, but surrendered to Oedipus, who delivered the country from the Sphinx. After the death of Eteocles and Polyneices, the sons of Oedipus, he once more took the reins of government. His cruelty in forbidding burial of the corpse of Polyneices, and in sentencing Antigone (q.v.) to death for disobeying his commands, occasioned the death of his own son Haemon, who loved Antigone. See Sophocles, *Oedipus Tyrannus*, *Oedipus Colonus*, and *Antigone*.

Creosote (Gk *kreas*, flesh; *sōzō*, preserve) originally designated the oils distilled from wood tar which were (and still are) used as an antiseptic. The scope of the term has now been widened to include distillate oils, either single fractions or mixtures of fractions, produced by the distillation of any type of tar. The word should be preceded by an indication of its origin e.g. wood tar C., coal tar C., etc. Wood tar C. whose prin. constituents are phenols and phenolic ethers is used in pharmacy as an internal and external antiseptic and as an analgesic, and finds other outlets in the removal of liquid from jute fibres and in ore flotation. C. derived from coal tar is, however, the most important type, the annual production in Britain amounting to about three-quarters of a million tons. Its prin. uses are as a preservative for railway sleepers, telegraph poles and other outdoor timber, as a liquid fuel, as a fluxing oil in the production of road tar and bituminous paints, and as horticultural insecticide; it is also hydrogenated to produce motor fuel. For each of these purposes it must meet the appropriate specifications. Chemically, coal tar C. is a complex mixture containing appreciable amounts of naphthalene, fluorene, anthracene, phenanthrene, and other aromatic hydrocarbons together with their methyl and hydroxy-derivatives; it also contains basic materials such as quinoline and quinaldine and, particularly that derived from vertical retort coal tar, appreciable quantities of paraffins.

Crepis, see BARCKHAUSIA.

Crepuscularia (Lat. *crepusculum*, twilight), tribe of lepidopterous insects, including those called sphinxes or hawk-moths. They are twilight fliers, as distinguished from Diurna which, as the name implies, fly in the day, and Nocturna

which fly by night. The antennae of the C. taper to the end, where they have a club which is pointed at the apex in place of the oval club of the Diurna (butterflies) or the filiform antennae of the Nocturna (moths).

Crépy-en-Valois, Fr. tn in the dept of Oise. It is a picturesque tn with the remains of an old castle. The manufs. are furniture and textiles. Pop. 5400.

Créqui, anct Fr. family of Artois, taking their name from a vil. near Calais, and including *François C. de Blanchefort*, *Marquis de Marines* (c. 1624-87). Fr. soldier, made marshal of France, 1668. He refused to serve under Turenne, and was exiled. Later he was surprised and beaten at Consarbruck, 1675, lost Trèves, and was taken prisoner. Subsequently he returned to France, and took command on the Meuse and Moselle. In 1684 he took Luxembourg.

Renée Caroline de Froulay, Marquise de (1714-1803), b. at château of Montfaucon, married, in 1737, Marquis Louis Marie de C., who d. in 1741. She attracted around her a number of prominent literary figures, including Rousseau.

Cres (It. *Cherso*), Yugoslavian is. in the Adriatic, in the bay of Kvarner (q.v.), off the coast of Croatia. It belonged to Austria until 1919, in which year it was ceded to Italy. By the It. Peace Treaty of 1947 it went to Yugoslavia. The is. is very long and narrow. The prin. tn, also called C. (pop. 20000), has Rom. remains, and a Gothic church. Wine, fruit, and vegetables are produced. Area 160 sq. m.; pop. 9000. See ISTRIA.

Crescendo (It. from *creocere*, to grow, increase). The term is used in music to denote a gradual and steady increase in volume of sound. It is usually noted in the abbreviation *cresc.* or the sign <.

Crescent (Lat. *crēscere*, to grow) is properly applied to the moon in its first quarter, i.e. the waxing moon, but is also applied to the moon in its last quarter. Hence it is used of a crescent-shaped object whose horns point in any direction (originally to the observer's left). The C. is the anct symbol of the Turkish power or empire, having been adopted at the taking of Constantinople in 1453. It is also used figuratively of Islam. In heraldry a C. is the mark of cadency for the second sons of families and their descendants.

Crescentia, genus of evergreen trees, family Bignoniaceae, named after Pietro Crescenti of Bologna, who lived in the 13th cent. and wrote treatises on agric. subjects dedicated to Charles II of Sicily. The genus consists of large trees with solitary flowers rising from the trunk or branches. *C. cujele* is the cujele, or calabash-tree, indigenous to tropical America. The subacid pulp is eaten by the natives and is made into poultices. The hard shell is used for a bottle, and is also made into spoons, ladles, cups, basins, and bowls.

Crescentino, It. tn, in Piedmont (q.v.), 18 m. SW. of Vercelli (q.v.). Its bell-tower is famous for the fact that in 1776 an ordinary unson moved it to its present

position from its original site some distance away. Pop. 6000.

Crescimbeni, Giovanni Mario (1663-1728), It. poet and critic, joined the Jesuits' college in his native city of Macerata, and there composed his tragedy on the life of Darius and his motrical version of Lucan's *Pharsalia*. He was a founder of the *Accademia dell' Arcadia* in 1690, and was its secretary for 38 years. His *magnum opus*, *Istoria della volgar Poesia*, 1698, revised in 1714, is still a standard work on the hist. of It. poetry, the *Commentaries*, 1702-11, being the most valuable of his other works. Yet his country remembers him chiefly for his opposition to the artificial criteria of what was good in literature, which Marini and his admirers had estab. See G. Natali, *Atti dell' Arcadia*, 1928.

Crespi, Daniele (1590-1630), It. painter, worked in the studios of Giovanni Battista Crespi (q.v.) and Giulio Procaccini. Pavia and Milan, his bp., contain many of his paintings, and his finest work, a series of pictures illustrative of the life of St Bruno, hangs in the Carthusian monastery of Milan. His celebrated 'Stoning of St Stephen' may be seen in the Brera.

Crespi, Giovanni Battista (1557-1633), It. artist, known also as Il Cerano after his bp., was president of the Milanese Academy, instituted by Cardinal Borromeo, and attained to high distinction in his native city. A man of versatile gifts, C. was at once sculptor, painter, and architect. Guercino (q.v.) was his pupil.

Crespi, Guiseppe Maria (1665-1747), It. painter, also named 'Lo Spagnuolo,' from his love of finery. He was employed by the Grand Duke Ferdinand in the Pitti Palace. His method of colouring, consisting mainly of glazing, has caused the obliteration of many of his works. Besides being a historical and portrait painter, he was a brilliant caricaturist and did a number of etchings (after Rembrandt and Salvator). His 'Massacre of the Innocents' is at Bologna. Other works are in the Dresden Gallery (series of 'the Seven Sacraments'), Vienna Gallery ('Cumæan Sibyl'), Florence, Leningrad, Munich, and elsewhere. His three sons were also painters. See life by H. Voss, 1921.

Cress, name given to many plants with acrid or pungent leaves, chiefly belonging to the Cruciferae; but Indian C., *Tropaeolum majus*, is of the Tropaeolaceae, also known as nasturtium. Water-C., formerly *Nasturtium officinale*, is now *Rorippa nasturtium-aquaticum*. Other native cruciferous species include *Cardamine amara*, bitter-C.; *C. hirsuta*, hairy bitter-C.; *Barbarea vulgaris*, winter C., or yellow rocket; *B. verna*, land-C., or early-flowering yellow rocket; *Cardaminopsis petraea*, northern rock-C.; *Arabis alpina*, Alpine rock-C.; *A. hirsuta*, hairy rock-C.; *A. stricta*, Bristol rock-C.; *Coronopus squamatus*, swine-C., and wart-C.; *C. didymus*, lesser swine-C.; *Cardaria draba*, hoary C.; *Lepidium sativum*, garden-C., cultivated as a salad plant; *I. smithii*, Smith's C.;

Teesdalia nudicaulis, shepherd's C.; and the *Thlaspi* genus is one of the penny-C.s.



HAIRY BITTERCRESS

Cressy, see CRÉCY.

'Cressy,' armoured cruiser in the Brit. Navy, which gave its name to a class of six vessels laid down in 1898. They were steel built, with a h.p. of 21,000, a displacement of 12,000 tons, and a length of 440 ft. In the First World War the C. was a unit of the ill-fated force C. Whilst on patrol duty between England and Holland she was torpedoed and sunk together with the *Hogue* and *Aboukir* on 22 Sept. 1914, just off the Dutch coast. This event estab. beyond doubt the power of the submarine, which had previously been underestimated.

Crest, Fr. tn, in the dept of Drôme, 19 m. SSE. of Valence. It has an impressive 12th cent. keep, and has a silk industry. Pop. 5400.

Crest (Lat. *crista*, a tuft or plume), comb on the head of an animal, whence any tuft or the top of anything, e.g. of a helmet or a hill. In heraldry, the ornament surmounting the helmet of a knight, which came into general use as part of armorial bearings in the 14th cent. It was generally made of leather, painted, and held in place by rivets, wires, or thongs. It was never placed on top of a coronet as shown in some modern drawings. Early C.s were usually in the form of a panache of feathers, or the head of an animal or bird. Much later it assumed all manner of ridiculous shapes, e.g. rocks, windmills, broken masts, and the like.

Cresting, in architecture, an ornamental finish to the ridge of a roof, or the top of a wall, screen, etc.; usually takes the form of conventional foliage. It was originally executed in stone, but later copied in wood and metal, e.g. on wooden screens, iron railings, etc. It was derived from the Middle E., and introduced into W. Europe during the Romanesque period. In Gothic times it became more elaborate and graceful.

Creswell, Sir William (1850-1933), Australian admiral and organiser of the modern Royal Australian Navy, *b.* Gibraltar. In 1891 he was appointed commandant of the Australian Naval Defence Force. When the Australian Commonwealth was estab. he was the first director of its naval forces.

Creswick, small tn in the co. of Talbot, in Victoria, Australia. It lies on the Tullaroop Creek, 11 m. N. of Ballarat in the centre of a fruitful well-forested country. The neighbouring alluvial gold and quartz mines are the chief source of its prosperity. Pop. 1400.

Creswick, Thomas (1811-69), landscape painter, *b.* Sheffield. He began to draw as a schoolboy, and in 1828 went to London to study art, becoming R.A. in 1851. He usually painted faithful representations of the rural scenery he had enjoyed in his native Yorks, in N. Wales, and Cornwall. From 1848 onward C. tried his hand at seascapes, the best of which are 'A Squally Day' and 'Wind on Shore,' but is at his best in smoothly-painted calm and cheerful country scenes.

Cretaceous System, so called because its best-known and most characteristic rock

of marine origin. Above these is a mass of clay known as Gault in the SE., but in Norfolk, Lincs, and Yorks this is replaced by a thin deposit of lime known as the Red Chalk. These are marine deposits, as also are the Upper Greensand and the Chloritic Marl (q.v.). Then lying over these is the most extensive of the C. rocks—the Chalk, which retains the same general characters wherever it exists in England. It is usually a white earthy limestone with layers of flint running parallel to the bedding planes in the upper portions. Fragments of shells occur plentifully, but it is mainly composed of coccoliths (q.v.).

Fossils of the Cretaceous System are similar to those of Jurassic times. Since the Cretaceous strata of Britain are almost all of marine origin, the remains of plant life are chiefly found in the S., where the beds are of fresh-water origin, and consist chiefly of ferns and conifers. The upper C. rocks of Germany, however, furnish plant remains of extinct species of maple, oak, walnut, beech, laurel, etc. Amongst animals the protozoa are abundant. Other animals which flourished in the chalk were foraminifera, sponges,

CONTINENTAL CRETACEOUS.	EQUIVALENT ENGLISH STRATA.
Danian	(Wanting)
Senonian	Upper Chalk
Turonian	Middle Chalk
	Lower Chalk
Cenomanian	Chloritic Marl
	Upper Greensand
Albian	Gault
Neocomian	Lower Greensand
	Wealden
	Upper Cretaceous
	Lower Cretaceous

consists of white chalk. The C. rocks in England lie to the E. and SE. of the Jurassic rocks. They extend from the Yorks coast through E. Yorks, Lincs, the E. Anglian cos., and so in a SW. direction to Hants and the Isle of Wight, and also eastwards through Surrey, Sussex, and Kent to the coast between the mouth of the Thames and Brighton. They are only found in patches in Scotland and Ireland, but are considerably developed on the Continent, being found spread over large areas in France, Belgium, Holland, Denmark, Sweden, Germany, Poland, and Russia, while also largely developed in S. Europe. They lie under younger formations, being more or less concealed over a large part of this area, however. In England and France the main Cretaceous development is white chalk, in Germany this is replaced by limestones, shales, sandstones, etc., while in S. Europe there is a great development of massive marine limestone. The System extends over America, Canada (where there are the chief oil-producing centres), and Greenland, Australia, and New Zealand, while a large development occurs in the Deccan in India.

The lower strata of the C. S. consist of sand and clay. In the S. of England, where the Weald clay is followed by the Lower Greensand, the beds are of fresh-water origin, whereas in Yorks they are

sea-urchins, star-fishes, and brachiopods. Bivalves, such as *Hippurites*, etc., were very numerous, while ammonites were abundant. Among the fishes were various kinds of shark, while the majority of the genera of fishes existing to-day (Teleostei) were existing then. Further, huge land reptiles (dinosaurs), winged reptiles (*Pterodactylus*), and serpent-like reptiles (*Mesaurus*) were common then, and toothed birds, such as *Ichthyornis* and *Hesperornis*, were also existent in the W. hemisphere in this epoch.

Conditions under which Cretaceous rocks were deposited. The Lower C. rocks were formed under similar conditions to the Upper Jurassic. At this time most of Britain and Ireland existed as dry land, while a large riv. from the N. had its estuary lying over the SE. of England. The delta deposits of that riv. formed the Wealden beds. Then the land sank and marine conditions prevailed, while the Gault was laid down, although the area was not too remote for mud to be deposited from the rivs. Then as the depression continued, the coast receded until a little earthy deposit was added, and then the chalk was deposited. Similar conditions at present prevail in the Caribbean Sea, where sediment is being piled up which may form a rock similar to chalk.

Crete (Gk *Krētē*, Lat. *Creta*, Turkish

Girit, It. Candia), or Candia, large is. in the Mediterranean Sea, considered the most southerly part of Europe. Its NW. extremity, Cape Grabusa, is 60 m. S. of Cape Mallia in Greece, and its NE. extremity, Cape Sidero, is 110 m. from Cavo Crio in Asia Minor. C. is situated between $34^{\circ} 55'$ and $35^{\circ} 41'$ N. lat., and between $23^{\circ} 30'$ and $24^{\circ} 19'$ E. long. Its length from E. to W. is about 155 m., its width varies from 7 to 35 m. Its area is about 3200 sq. m., and it is by far the largest of the Gk. is. The coasts are generally steep and unfavourable for harbourage, though the N. coast is greatly indented. Some of the prin. bays, from W. to E., are those of Kisamos, Canea, Suda, Rethymnon, Candia, Mallia, Mirabello, and Sitia. On the N. are the capes of Spada, Drepano, Stauros, Panagia, and Sidero (NE.). The chief capes on the S. side, which is less indented, are Crio (SW.) and Lithinon. The only large bay is that of Messará. The largest is. in the neighbourhood is Gavdo (anc. Claudia), about 40 m. SW. of Cape Lithinon. The surface is extremely mountainous, especially in the W., where the massive range of the White Mts culminates in Mt Pachnes, at a height of 8045 ft. In the centre of the is. is a lower group, but it attains to a greater height in the almost isolated Mt Psiloriti (anc. Ida), 8058 ft, the highest peak in the is. Further E. are the Lassithi Mts (chief peak Mt Christos, 7024 ft). There are a few plains of which the largest is that of Messará, drained by the Yeros R. and about 30 m. long and 6 m. wide. It is very fertile. Next to this comes the plain of Canea, in the N., through which flows the R. Platanos (anc. Iardanos). From the nature of the country it is evident that the streams are mere mt torrents. The mountainous country is cut up by deep and precipitous ravines. Among the mts are fertile plateaux, which furnish excellent pasturage during the warm season of the year. The climate is salubrious, and is one of the best in Europe. Summer is hot and dry, winter warm and wet. The air is pure and fresh as a general rule, but the fierce southerly wind, known as the *sirocco*, sometimes raises the temp. to over 100° F. Earthquakes are common but not often severe. See R. Pashley, *Travels in Crete*, 1837; T. A. B. Spratt, *Travels and Researches in Crete*, 1865; X. Fielding, *The Stronghold*, 1953.

Flora and Fauna. The forests with which C. was once covered have now disappeared almost entirely, but the cypress is still found extensively among the hills, while the lower slopes of the mts and many of the valleys are covered with olive woods. Though in many parts the soil prevents the growth of vegetation, in others it is very luxuriant. Oranges and lemons are extensively cultivated and exported, while the carob-tree yields the carob beans. Sheep are bred in many parts of the is., and the native breed of mules is very famous. The largest wild animal is the Cretan ibex or goat. Numbers of these animals are still found in the higher regions.

Minerals. The volcanic origin of the is. would lead one to the opinion that it is rich in minerals, but nothing much has yet been done to verify this supposition. Gypsum occurs fairly widely. Iron, copper, lignite, chrome, lead, and zinc have been found, but the minerals of C. have not been exploited much since the Middle Ages.

Population, Religion, and Chief Cities. The pop. is approximately 462,000. The vast majority of the inhab. of C. are Christians. The Muslims, mostly descendants of Greeks converted to Islam, emigrated after the annexation of C. to Greece. The Jewish pop. is numbered only in hundreds. Under the Venetians the pop. had been estimated at 250,000, but this number diminished after the conquest of the is. by Turkey. The pop. then rose until the Gk revolution of 1821, after which came a great fall. Since that time it has again increased to the present number. All the inhab., whether Christian or non-Christian, speak Greek, but the dialect of C. is distinctive. The great bulk of the inhab. belong to the Gk Orthodox Church; the is. being governed by a synod of seven bishops, with their president, the metropolitan of Candia, dependent on the patriarch of Constantinople. There are about 3500 Gk churches on the is., and 4 Rom. Catholic churches. Education is nominally compulsory. The chief cities are Canea, the cap. (33,200), Candia or Heraklion, the former cap. and see of the archbishop of C. (51,150), and Rethymnon (11,050), all on the N. side of the is.

Archaeology. In the Homeric age there were over a hundred flourishing cities throughout C. The remains of many of these are of great interest archaeologically. Extensive excavations have been carried out during the 19th cent., and through the discoveries made by Schliemann at Hissarlik (Troy) and at Mycenae, interest in the origin of prehistoric Gk civilisation was revived. The art and culture thus brought to light were termed Mycenaean, covering the later Bronze Age. They represent, in fact, a late and decadent stage of a highly advanced and wide civilisation centred in C., of which the greatest period may be placed between about 2000 and 1400 BC. This civilisation, now generally known as Aegean, covers all that period of E. Mediterranean culture before the beginning of the historic period of Gk hist., usually dated 800 BC. Perhaps the most striking feature is that writing, hieroglyphic and linear, was in use, a confirmation of the old legend that the Phoenicians did not invent but only changed the alphabet. Traces of Aegean civilisation have been found as far W. as Spain, Sardinia, and Marseilles, near Venice in the Adriatic, largely in Sicily, throughout the Aegean, in Cyprus, and in Palestine. Trade with Egypt was frequent from the earliest time. Before the discoveries, mainly due to Sir Arthur Evans, Gk hist. before the Dorian invasion was a waste of legends and myths. The tale of Minos, the law-giver, the tribute of boys and maidens from Athens to the minotaur of Theseus,

Ariadne, and the labyrinth built by Daedalus, all have now a foundation of fact. In 1834 was found, 4 m. from Candia, the site of Cnossus, the ancient metropolis; in 1851 Spratt discovered many ruins, and in 1878 Minos Kalokhairinos came on large jars and remains of pottery identical with 'Mycenaean' art. In 1894 Evans explored part of E. and Central C. Evidence was forthcoming of a script, afterwards called 'Minoan B' and now (1956) claimed to have been deciphered (see M. Ventris and J. Chadwick, *Documents in Mycenaean Greek*, 1956). In 1905 Evans began the

one of a procession in life-size of women with tight-belted waists and flounced skirts, curiously modern in appearance. The costume is markedly different from that of historic Greece. A fresco of a handsome youthful cup-bearer with tightly fitting belted drawers has a profile almost Gk in outline, with no Semitic or E. traces. Immense stone and earthenware jars, beautifully decorated, were found in large quantities, probably used for storing oil and corn. Clay documents, inscribed in the Minoan writing, abound, as also do lead and clay seals, probably used for documents of more perishable



E.N.A.

THE HALL OF THE DOUBLE AXES IN THE PALACE OF MINOS, CNOSSUS

excavation work at Cnossus, and unearthed a vast palace, forming a large square occupying nearly 6 ac., with a paved central court, halls, and ante-chambers, connected by passages well built and arranged. A small council chamber, in which is a gypsum throne, has a bath chamber attached; there were upper stories and wide stone stairs; the palace revealed a most modern system of drainage, with water-closets, a stone shaft carrying the water from the roofs to flush the drains, latrines, and other sanitary conveniences. Terra-cotta pipes of modern pattern connect with the main drains. Fresco-paintings of an advanced and realistic style decorated the walls, many representing bulls and bull-fights,

nature. From the shrines it is seen that the worship was mainly that of a great mother goddess, with fetish images of pillar and dove, of double-headed axes and of serpents. Enamel work and inlay are of high artistic excellence; a gaming-table of gold-plated ivory with crystal plaques set in silver and blue enamel is a beautiful example. Ivory figures of exquisite workmanship show the plastic skill. The highest perfection is found in the pottery: the polychrome on white or dark ground, 'Kamarens' ware, preceding that of dark painting on a lighter ground. The decoration, markedly distinguished from the early Gk geometric patterns, is designed in free representations of flowers, aquatic plants, and animals. A small

columnar sanctuary used in the worship of the Minoan goddess as Lady of the Nether World was found in 1929, and the W. portico and E. portico were explored. A winding staircase from the sanctuary led to a lustral basin in the depths of the earth; while a tunnel in the E. bastion was found to lead in a series of parabolic curves, broken up at intervals by small settling tanks, to a large tank for purposes of washing. Sherds were also found, which dated from about 1900 BC, and wall-paintings formed by the impressions caused by a small sponge dipped into yellow paint and then applied to the wall. The restoration of a fresco of Minoan octagonal shields and spiral bands was accomplished.

In June 1930 an outer entrance system was seen and explored. A wall dating from about 2100 BC, composed of massive blocks, enclosed an acropolis, houses, and part of the palace court. Two round walled pits disclosed sherds dating from the Middle Minoan period. A movable stone altar, with a relief of the sacred horns and double axes, was a notable discovery. These ancient remains were found to have been built over houses of a still more distant period, with stucco pavements, stairways, and household relics in wonderful preservation. Many vessels decorated with snake designs were revealed. Remains of other palaces and shrines have been discovered throughout the is., at Gortyna, Hagia Triada, Zakro, Phaestos, Palaikastro, and elsewhere. See J. Pendlebury, *The Archaeology of Crete*, 1939.

History. The rulers of C. were seakings, and the people who developed the civilisation described above probably came from Asia Minor. There were early relations between C. and Egypt, and the impulse toward civilisation may have come from Egypt early in the 3rd millennium BC. Art may likewise have been influenced from Asia Minor. Besides corn and wine, C. possessed copper mines, and purple dye was extracted from the murex; but her prosperity was chiefly dependent on seaborne trade. Little is known of Cretan religious beliefs; but a nature goddess was worshipped, her symbol was the double axe, and she was later identified by the Greeks with the mother of Zeus. Cretan rule spread over the Aegean is. and the mainland of Greece. But in the 2nd millennium (Knossos (q.v.), Phaestus, and other cities were overtaken by some disaster, whether natural or otherwise is uncertain. At all events there is no trace of foreign invasion, and prosperity returned for a period. However, about 1400 BC Knossos was pillaged by invaders from abroad, and Minoan civilisation ended. The is. was subsequently occupied by Dorians. In the 1st cent. BC the Cretans incurred the enmity of Rome by an alliance with Mithridates, and this was increased when the islanders joined arms with their neighbours of Cilicia in practical expeditions. An attack was made on C., and the is. was subdued in 66 BC by Q. Metellus, thence surnamed

Creticus. It then continued as a Rom. prov. till the year 823, belonging, after the div. of the empire, to the Byzantine emperors. During this latter period it formed part of the prefecture of Illyria. In 823 it was taken by the Saracens, under whose rule it became a slave market and a centre of piracy. In 960 it was recaptured by Nicephorus Phocas and remained under the Byzantine sovereignty until 1204. Then, on the capture of Constantinople by the Latins, and the estab. of the Lat. empire, C. was allotted to Boniface, marquis of Montserrat, who sold it to the Venetians (1205). The Venetian rule in C. was oppressive, and many revolts took place but none were successful. During this period Candia was made cap. of the is., to which it gave the official title in the Venetian language of 'Candia,' a name which the is. still retains among the Italians. In 1645 the Turks made an attack on the is., and the discontent of the Cretans made their conquest an easy one. Only the cap. held out for long, and the siege of this city, though intermittent, is said to be the longest on record. It lasted for 24 years. From this time until the Gk revolution C. remained subject to Turkey. The first of a regular series of revolts broke out in 1770, but this was ruthlessly put down before it could spread far. The gov. grew worse rather than better, and fresh rebellions occurred in 1813 and 1821. The great powers (France, England, and Russia) refused to allow the cession of C. to Greece, and for 10 years the is. was under the rule of the Egyptian governor. Further revolts occurred, but in 1878, after the treaty of Berlin, when fresh insurrections stirred up by Greece were in progress, the pact of Halepa was drawn up, largely by the efforts of the Brit. consul in the is. This pact gave the is. almost entire autonomy, but party struggles were so fierce and the intrigues so persistent that the condition of the country grew gradually worse. In 1889 Turkey sent a military governor to the is., whose rule practically abrogated the former treaties. In 1894 the powers persuaded Turkey to appoint a Christian governor. But in the years since 1889 large sums of money had been drawn from C. to Turkey, and financial troubles followed. In 1897 a Gk force landed in C. and attacked the Turks. The is. was again in open revolt but Greece and C. were alone, for the great powers sided with Turkey. Complete autonomy was granted, but annexation by Greece was declared impossible. In 1898 the Turkish forces were withdrawn from the is., and Prince George of Greece was nominated high commissioner of the is. A section of the people disliked his arbitrary policy and raised a revolt in 1905, proclaiming the annexation of the is. to Greece. This insurrection was put down by the powers. In 1906 the powers gave to King George of Greece the right to propose the high commissioner, and he appointed Alexander Zaimis. In 1911 it was announced that no more high commissioners would be appointed to office. On 14 Oct. 1912 Cretan deputies were admitted to the Gk

Chamber, and the is. was annexed by Greece. The treaty of London, 1913, confirmed this act and C. has ever since been under Gk rule. C. was the scene of two Venizelist revolts against the monarchy, in 1917 and in 1935. In the Second World War C. was captured by the Germans between 20 May and 2 June 1941, who held the is. until late 1944. See also succeeding article. See R. Pashley, *Travels in Crete*, 1837; T. A. B. Spratt, *Travels and Researches in Crete*, 1867; J. H. Froese, *Short Popular History of Crete*, 1897; J. Baikie, *The Sea-Kings of Crete*, 1913; Sir A. Evans, *The Palace of Minos at Knossos*, 1921-36; G. Glasgow, *The Minnows*, 1923; J. Charbonneau, *L'Art égyptien*, 1929; and H. T. Bossert, *The Art of Ancient Crete*, 1937.

Crete, Battle of (May-June 1941). With characteristic speed the Germans attacked C. only 3 weeks after the Brit. evacuation of Greece in the Second World War (see GREECE, SECOND WORLD WAR, CAMPAIGNS in 1941). They captured the is. within the space of 13 days (20 May-2 June) and by 3 June the Brit., Anzac, and Gk garrison had evacuated the is., leaving some 18,000 men behind. The brief campaign was a triumph of Ger. thoroughness in organisation and ingenuity. It afforded the first instance in modern warfare of the capture of a country exclusively by airborne troops, dropped by parachute, and opposed by a strong garrison and a navy in full control of the sea. The Mediterranean Brit. fleet played its part successfully in so far as it was able to disperse Ger. convoys, sink many boatloads of Ger. invading troops, and prevent any landing from the sea in force on Cretan soil. But its losses were grave, comprising 2 cruisers and 4 destroyers; and later the cruiser *York*, which was being repaired in Cretan waters, was also sunk. The lack of fighter support and the narrow waters in which the ships were engaged made them an easy target for the attacks of Ger. bombers.

By the aid of hundreds of dive-bombers, operating from the captured and newly organised airfields in Greece, only 80-100 m. from Crete, the Germans were able not only to give adequate protection to their airborne troops, which were 'ferried' over in a ceaseless stream of transport planes and gliders, but to crush the spirit of the people and deliver annihilating attacks on the garrison. It was found impossible to give the garrison any adequate protection from the air, and such fighter planes as had been operating from Maleme aerodrome in Crete were withdrawn owing to the weight of the attacks on the aerodrome.

The Germans landed their airborne troops regardless of losses. Most of a force of 3000 men who dropped in the Suda Bay region and in the Candia area were killed, as well as a detachment which reached the outskirts of Canea, 20 May. The next day came more swarms of Ger. paratroops. Ger. bombers sprayed the is.'s airfields with explosives for hours at a stretch. Troop-carriers landed on the beaches. Yet for some time the Brit. and

Anzac troops, under Freyberg (q.v.), and aided by Gk soldiers and Cretan hillmen, held the airfields with desperate courage. Great numbers of paratroops were killed and many troop-carriers and gliders were destroyed by gunfire in the air. After another day's intense fighting, the Germans gained a foothold at the one important aerodrome, at Maleme, 10 m. SW. of Canea, and also in the tn of Heraklion (Candia), 70 m. E. of Canea. There were further smaller landings of airborne Ger. troops in the succeeding days. The R.A.F. delivered heavy attacks on enemy positions and aircraft in Crete, and Brit. heavy bombers attacked the aerodrome at Maleme as soon as it had fallen into Ger. hands.

It is probable that the Brit. resistance was unexpectedly prolonged in the eyes of the Germans, for, having failed to capture the three chief ports, Canea, Retimo (Rethymnon), and Heraklion, at the start of the invasion, they bombed these tns for sev. hrs (24 May). King George of the Hellenes and the Gk Gov., who had arrived in Crete on 23 April, when the Germans were overrunning Greece, had, in the meantime, left the is. and reached Egypt. On 26 May the Germans, flinging in fresh troops and always regardless of heavy losses in men and aircraft, renewed their offensive, concentrating their attack on the Maleme area in a drive towards Canea. But, despite the severe losses inflicted by the R.A.F., airborne reinforcements continued to reach the Germans. All were supported by the most sustained and intense bombing by dive-bombers, and this co-ordination was impressively assisted by a revolutionary use of wireless. The Ger. forces in the is. were now enlarging their penetration into the Brit. defences, so that, in the area W. of Canea, the defending forces were compelled to withdraw to new positions. Two days later the Brit. forces had withdrawn to the E. of Suda Bay in the face of new attacks by a still more heavily reinforced enemy.

But the end was now in sight; for the Germans had captured the port and aerodrome at Heraklion and were threatening the vital position of Suda Bay. Already the Brit. command was learning a lesson in modern warfare demonstrated in practice. The Ger. paratroopist was a man superior in small arms. He usually had a Tommy-gun. This he could use solely for defence, but it was primarily used for offence. He was continuously protected, supported, and directed by Ger. aeroplanes. As in Norway, Finland, France, and Greece, experience was proving the superiority of the bomber used as front-line artillery. It had become obvious that the Germans contemplated the task of taking Crete as principally a matter for aeroplanes and Tommy-guns. Apart from landing heavy mortars and light field-pieces, the Germans broke the ground with Tommy-guns and planes.

After a week of what till that date had been the fiercest fighting in the war, it was clear that Crete could not be held, for the Brit. naval and military forces could not

operate indefinitely in and near the is. without more air support than could be provided from the bases in Africa. Apart from Gk soldiers and some civilians who were taken with the Brit. imperial forces, some 17,000 Brit. troops had been evacuated by the beginning of June, and nearly half the garrison had become casualties. Continuous patrols of R.A.F. and S. African fighters protected the warships and merchantmen in the task of evacuating the troops. Other aircraft dropped food and medical supplies to units isolated in the is., while heavy bombers continued to destroy Ger. planes on the ground in Maleme and elsewhere.

sea, while they did not foresee that airborne troops, aided by dive-bombers, could not be overcome without adequate supplies of tanks and heavy guns. This criticism has never been fully answered. The greater anxiety was felt at the outcome of this historic battle not only because of its effect on the defence of Egypt, but because of the opinion that the invasion of Crete was, in some sort, an illustration of, perhaps a try-out for or prelude to, an invasion of Britain. It is, however, important to see the B. of C. in its correct perspective. It was 'only one part of the very important and complicated campaign which was being fought



Imperial War Museum

CRETE DURING THE EVACUATION

This photograph shows the reason why the enemy made it impossible for shipping to stay in Suda Bay.

Thus ended, in a phantasma of incredible scenes, the epic battle for Crete. The chances of the defence succeeding against a ruthless airborne invasion covered by dive-bombers inevitably turned upon a copious supply of heavy equipment, and this it was apparently impossible to grant. The dive-bomber, in fact, smothered the small artillery and anti-aircraft equipment. It was objected by contemporary critics that, inasmuch as the Brit. authorities had been in occupation of the is. for 7 months before the invasion, they ought to have had a longer-sighted appreciation of the kind of attack that they would have to meet, and that they too lightly assumed that the Germans could not succeed without the heavier material that could come only by

in the Middle E., and to select one particular sector of our widely extended front' for criticism and debate was a 'misleading method of examining the conduct of war' (Churchill in the Commons, 10 June 1941). Had the Brit. long-range bomber-fighters been able to take part in the battle from the start the result might have been different; the margin of defeat was in fact a narrow one. But even at this time the Ger. air force greatly outnumbered the Brit. and Allied air forces, and, striking from the centre, was able to concentrate overwhelming strength at any point on the periphery of the Reich's defences.

Yet it was not all gain on the one side and all loss on the other. The 13-day interval helped the Brit. to regain control

in Iraq (q.v.), in addition to which it gave time for the arrival of further reinforcements in the Near E. A pusillanimous refusal to defend Crete would have had, too, as lamentable an effect on Amer. public opinion and on that of other neutrals as a refusal to defend Greece. It was probably sound strategy to compel Germany to fight for every inch of the soil she coveted and to make her victories as costly as possible. Some 5000 Germans were drowned in trying to cross the sea, and at least 12,000 were killed or wounded on the is. The Ger. Luftwaffe suffered extraordinary losses. Above 180 fighter and bomber aircraft were destroyed, and at least 250 troop-carrying aeroplanes, and that at a time when Brit. air strength was overtaking the Germans. Immediately, however, the strategic situation in the E. Mediterranean was changed, to the disadvantage of the Allies. The navy now had to operate in narrower waters, and the effect upon Germany's use of the Dardanelles was likely to be serious. With Crete athwart the Aegean entrance, it would be easier for the Germans to develop coastal traffic through the Dardanelles and Gk territorial waters up to Trieste. But, in the sequel, it became evident that Germany's main pre-occupation was the protection of the right flank of her armies, which were now being disposed for attack along the whole Russian frontier from Finland to Rumania. See A. Moorehead, *Mediterranean Front*, 1942; and C. Buckley, *Greece and Crete*, 1941, 1952.

Crétineau-Joly, Jacques (1803-75), Fr. historian whose *Histoire de la Vendée*, 1840-2, is still a standard work. He was regarded by contemporaries as an authority on the relations between the Rom. Catholic Church and the State.

Cretenism, congenital disease, causing idiocy or arrested mental development, together with bodily deformity, always associated with absence or atrophy of the thyroid gland. The connection between goitre (q.v.), myxoedema (q.v.), and C. is close. Myxoedema, however, comes on in adult life, and is associated with a destructive change in the thyroid gland, although the removal of the gland will bring on a similar condition. C. is really a congenital myxoedema. It is found largely in the lower valleys of the Alps and Pyrenees, and other mountainous parts of Europe, and is probably associated with a lack of iodine in the soil and therefore in the drinking water. It is rarely met with in altitudes above 3000 ft. Cretons are usually dirty, obscene, and shameless, and have large open mouths with protruding, large tongues. They have receding foreheads, large hands and feet, and rickety limbs, while they usually have a dwarfish body, with thick, dry, loose skin, and a protuberant abdomen. The treatment consists in the administration of thyroid. See GOITRE and MYXOEDEMA.

Cretonne (perhaps from Creton, a vil. in Normandy, where linen goods were manufactured) was originally a Fr. fabric, strong and white, with linen weft and

hempen woof. The material known as C. to-day is a stout cotton cloth, with a crape, basket, or wave figure produced on the loom, and a pattern printed sometimes on both sides, when the two designs usually differ. It is unglazed, and was introduced about 1860 as a substitute for the thinner chintz, which was largely used for curtains and for covering chairs, etc. Inferior qualities have a weft of cotton waste and patterns printed in bright, fugitive colours.

Creusa: 1. Daughter of Hecuba and Priam, king of Troy. Wife of Aeneas, and mother of Ascanius, she was parted from them after the tumult in the fall of Troy, but saved by the goddess Cybele, who made her a priestess. Another tradition states that she perished on the night of the city's capture. In Virgil C. appears as a phantom before Aeneas, prophesying his disasters and eventual glory in Italy.

2. (**Glaucē**). A daughter of Creon, king of Corinth. Jason loved her, and Medea, his wife, being jealous, sent her as a wedding gift a poisoned garment which caused her agonising death.

3. Daughter of Erechtheus, king of Athens, and mother of Janus and Ion by Apollo. She exposed Ion at his birth and married Xuthus, to whom she bore no child. The Delphic oracle told them to adopt Ion, who had been brought up in the shrine at Delphi. Suspecting his identity C. determined to poison Ion, but he discovered her plot, and she only escaped death by fleeing to Apollo's altar.

Creuse: 1. Fr. riv. Rising near Aubusson, and flowing NW. through a deep valley, it joins the Vienne 12 m. N. of Châtellerault. Length 150 m.

2. Dept of France, formed of part of the anc. prov. of Marche, and small parts of Poitou, Bourbonnais, Limousin, and Berry. It is watered by the R. C., is mountainous, and its soil is thin and unproductive. In the S. hilly dist. there are wide stretches of pasture. The climate is moist, and very cold in winter. Stock rearing is most important, but potatoes and some cereals are produced. There are a few coal-mines, and gold is found. Carpets, textiles, wooden shoes, and hats are manuf. The prin. tns are Guéret (the cap.) and Aubusson (qq.v.). Area 2163 sq. m.; pop. 172,700.

Creusot, Le, Fr. tn in the dept of Saône-et-Loire. It is in a coalfield, and has neighbouring iron-mines. There are numerous metallurgical and engineering works, including the great Schneider-Creusot armament works. These were heavily bombed by the R.A.F. while in Ger. occupation during the Second World War. Pop. 25,200.

Creutz, Gustav Philip, Count (1731-85), Swedish poet and diplomat, b. Anjalagård, Finland. He had a brilliant career and became ambas. in Paris in 1772. His literary fame rests on his pastoral idyll *Atis och Camilla*, 1761. It possesses, like C.'s other rococo pastoral, *Daphne*, 1762, a grace of style and melody which led admiring critics to call the author 'the last artificer of the language.' See G. Castrén, *G. P. Creutz*, 1917.

Cruzer, Georg Friedrich (1771-1858), Ger. classical philologist, prof. in the univ. of Marburg (from 1802) and Heidelberg (1807-45). Wrote *Symbolik und Mythologie der alten Völker, besonders der Griechen* (4 vols., 1810-12). Its main theory is that the origins of Gk mythology go back to an original monotheistic religion. This theory, accepted by Schelling, Hegel, and Bachofen, was pulled to pieces by G. Hermann, J. H. Voss (*Antisymbolik*, 2 vols., 1824-6), and C. A. Lobeck (*Aglaophamus*, 1829). C. ed. Plotinus (Oxford), 1835, and other texts, and wrote an autobiography (*Aus dem Leben eines alten Professors*), pub. in 1858.

Cruznach, see KREUZNACH.
Crevalcore, It. tn, in Emilia-Romagna (q.v.), 19 m. NW. of Bologna (q.v.). Pop. 13,000.

Johnsbury, Vermont, founded 1785, was named in honour of C., who was Fr. consul at New York and a benefactor of Vermont. Lives by Robert de Crèvecoeur (Paris), 1889; J. P. Mitchell (New York), 1916.

Crèvecoeur (Fr. for heart-breaker), Dutch stronghold, which was important in hist. from 1587 to 1794, commanding a central strategical position at the confluence of the Dieze and Maas, 4 m. NNW. of Bois-le-Duc (s Hertogenbosch), in N. Brabant.

Crèvecoeur-le-Grand, Fr. vil. in the dept of Oise, 12 m. N. of Beauvais. It possesses an old castle with picturesque gardens. There are manufs. of woollen goods and pottery. Pop. 1800.

Crevillente, Sp. tn in the prov. of Alicante, near the Mediterranean coast. It



From

THE RIVER CREUSE AT BUSSEAU, NEAR GUERET
 The railway viaduct is 166 ft high and 1000 ft long

Crèvecoeur, Michel Guillaume Jean de (pseudonym, J. Hector St John) (1735-1813), Amer. writer, b. Caen, Normandy, and educ. at a Jesuit school, also spending some time in England. He went to New York in 1759 and became naturalised as an Amer. citizen in 1765, having acquired a farm near Chester, New York. His fame rests on his *Letters from an American Farmer* (first pub. in England 1782), a series of charming essays giving a farmer's reactions to the life and issues of the times. These *Letters*, with their glowing descriptions of the Amer. frontier, are said to have had an appreciable influence on emigration to America. Other works were *Voyage dans la haute Pensylvanie et dans l'état de New York* (3 vols., Paris), 1801; *Sketches of Eighteenth Century America*, 1925. The township of St

has Rom. remains, and manufs. flour, rope, and *espadrilles*. Pop. 12,000.

Crew (probably from *accrue*, reinforcement, from O.F. *accrue* and *accrotte*, to increase) is used of a body of men who associate together to carry out some special work, and especially of men employed in a ship, that is, of the petty officers and seamen, exclusive of the captain and commissioned officers. In the royal navy the C. is divided into over 175 grades, the largest being that of the able-bodied seamen. In merchant ships C.s are now smaller than they were in consequence of rapid improvements in masting, rigging, etc., in mechanical appliances, and generally in the economy of work and power. The Merchant Shipping Acts (q.v.), especially the elaborate statute of 1894, protect the

rights of seamen. Brit. consuls in seaports abroad have numerous duties with regard to Brit. merchant shipping. Thus a consul may make inquiry into all agreements and accounts of the C.s and into all offences and misdemeanours. Further, he must provide subsistence for shipwrecked, discharged, or abandoned sailors, and listen to any complaints with regard to food, etc. Since the repeal of the Navigation Acts a master has been able to man his ships with sailors irrespective of qualification, nationality, age, or strength.

Crews, Robert Offisy Ashburton Crews-Milnes, first Marquess of (1858-1945), statesman, the son of Baron Houghton, and educ. at Harrow and Trinity College, Cambridge. In politics he was a Liberal. In 1898 he was appointed secretary of state for the colonies. In 1910 he was secretary of state for India, and was ambas. to France 1922-8. Secretary of state for war, 1931. He was leader of the Liberal party in the House of Lords 1936-44. During his tenure of office as secretary of state for India he was responsible for the important changes announced at the Delhi Durbar, including the removal of the cap., and the abandonment of the partition of Bengal. He was created earl of C., 1895, and marquess, 1911.

Crews, municipal bor. and important railway junction of Cheshire, England, 28 m. SW. of Manchester and 153 m. NNW. of London. It connects with the S. the main railway lines feeding the N. of England and Scotland, and is a junction for the lines passing through the mining dists. of Wales and the Black Country of Staffordshire. From C. it is possible to go direct to Liverpool and Manchester, Holyhead and N. Wales, N. Stafford, and Hereford, besides London. C. owes its commercial importance to the fact that it is a locomotive building centre; the majority of the pop. is in the service of the railway. The old London Midland and Scottish Railway Company (now part of Brit. Railways) gave the town schools, a mechanics' institute (including science and art classes), and a library, and also Victoria Park. The company further provided an electric power station, a number of subterranean roads to facilitate goods traffic, and a series of postal offices in which the mails for Scotland and Ireland are sorted. At the beginning of the century C. was still a small vil.; now the railway works are the largest in the world. Pop. 52,415.

Crewel Work, embroidery worked in coloured worsted yarns called crewels. This kind of wool is especially suitable for larger pieces of needlework, such as tablecloths, tapestries, and various furniture covers. Finer silks have tended to supplant crewels in the field of artistic needlecraft.

Crewkerne, tn of Somerset, England, in a fertile valley, 20 m. SE. of Taunton. Manufacts. of webbing, sail cloth, shirts, pyjamas, and gloves are carried on. The grammar school was founded in 1499. Pop. 4000.

Crib Biting, see HORSE (DISEASES).

Cribb, Tom (1781-1848), champion pugilist, started life as a bell-hanger, and became in turn dock labourer, sailer, and coal porter. The important years of his life were given up to fighting, and throughout his many contests he sustained only one defeat, that being at his second fight in 1805. Among his more famous adversaries were Jem Belcher, whom he defeated twice (in 1807 and 1809), the second time at Epsom, when the stakes were 200 guineas; Bob Gregson and Molincaux, the Amor. coloured champion, whom also he worsted on two occasions (in 1810 and 1811). His great fighting days over, C. retired to the position of publican in the Haymarket, whence he twice emerged into public notice, once when he sparred in Pall Mall before the Emperor of Russia, 1814, and again when in the dress of a page he guarded Westminster Hall at the coronation of George IV.

Cribbage. This game is usually played by two persons with a pack of 52 cards. Sixty-one points constitute a game, and these are scored by means of 2 pogs on a board containing 61 holes. The value of the cards is as follows: the kings, queens, knaves, and tens all count as ten, the rest of the cards having their face value, the aces counting as one only. The points of the game are scored by means of fifteens, sequences, pairs, by the knave being turned up (usually this point is termed 'one for his nob'), and by making thirty-one, or getting nearest to that number ('one for the go'). The cards are shuffled and cut in the usual way; the player cutting the lowest card wins the cut and proceeds to deal. This he does by dealing out 5 cards to each player alternately; the non-dealer has the right to score 3 points at any period of the game to make up for the advantage of the deal. The players having reviewed their cards now proceed to place 2 from their hand on the table: this is called making the 'crib.' The remainder of the pack is then cut by the non-dealer, and the top card turned up. The cards are then played alternately, starting with the non-dealer, and each card is 'called' as it is played, e.g. A, the non-dealer, plays a five, and calls five, the dealer B plays a six and calls eleven. A then plays a four and calls fifteen (for this he scores 2 points). B then plays a ten and calls twenty-five. A, finding that he cannot play without exceeding thirty-one, calls 'go' and B scores 'one for the go', since he also cannot play without exceeding thirty-one, or, on the other hand, plays a four (or a card of a value which will not make the total score thirty-one), and scores 'one for the go' just the same. Should the scores reached be exactly thirty-one, the player first reaching that score marks 2 points for game. The non-dealer then counts up his score (if any) from his hand, and then the dealer counts first his hand and then, turning up the crib, the crib. The card which has been turned up earlier in the game is a neutral card and counts to the non-dealer or dealer, whichever can use it. Pairs are

reckoned up in the hands, or at the end. Sequences: any 3 cards or more forming a sequence count 1 point for each card. Also if, by replacing one card already counted by another in the same hand of similar value but different denomination, another sequence can be reckoned, this is done, e.g. three (hearts), four, and five count as a sequence, whilst if the player holds also a three (clubs), this forms another sequence and is counted. Fifteens are counted during the play, whenever the value of all the cards played comes to fifteen, and are also counted in the hands or the crib afterwards; in the hands or the crib any combination of cards which amounts to fifteen may be scored, 2 being counted for each combination. A flush is counted only in the hands or in the crib. In the hands if all the cards are of the same suit this counts a flush, and 1 is counted for each card, whilst if the card turned up is of the same suit also, 1 more is counted. In the crib, however, the flush does not count unless the cards in the crib are of the same suit as the card turned up.

Criccieth, picturesque vil. with ruined castle and fortress, situated on Cardigan Bay in Caernarvonshire, Wales. It is a favourite seaside resort. Pop. 1500.

Crichton, James (1560-? 85), commonly called **The Admirable**, Scottish scold. Romance and tradition have been so busy with his name that it is difficult to form any just estimate of either his life or his character. He was b. Ellick, Dumfriesshire, Scotland, and educ. at the college of St Salvator, St Andrews, under Buchanan, where he had the young king for a fellow pupil. In 1577 he went to Paris where he served in the army for a short time, and in the univ. of Paris is said to have issued a universal challenge to all men upon all things, to be held in 12 different languages. In spite of spending the interval in music and dancing, on the appointed day he vanquished all his opponents. From Paris he went to Genoa, and repeated the feat, and thence to Venice in 1580. In Venice he won the friendship of the grandson of the famous printer, Aldus Manutius, and challenged all the scholars to feats not only of learning, poetry, and linguistic fluency, but of swordsmanship as well. In 1584 he pub. an elegy on the death of the archbishop of Milan, Cardinal Borromeo, and odes in honour of his successor and of the Duke of Savoy, and in 1585 he pub. a vol. of Lat. poems. In the same year he was appointed as the tutor to the Duke of Mantua's son, but was stabbed—possibly by his pupil; whether through jealousy or in a drunken brawl is unknown. That he was a prodigy was acknowledged by men of some weight, although the actual extent of his learning is unknown.

Crichton-Browne, Sir James (1840-1938), physician and psychologist. b. Edinburgh, where he received his medical education and qualified M.D., 1862. In 1871 he founded a pioneer school of neurology at the W. Riding Lunatic Asylum, Wakefield, from which he pub. valuable *Reports*; he was later medical

superintendent of Crichton Royal, an institution for mental disease at Dumfries. From 1875 he was lord chancellor's visitor in lunacy. He was elected F.R.S. in 1883 and was knighted in 1886. Besides work on neurological subjects, he pub. sev. vols. of popular and humorous reminiscences: *Victorian Jottings*, 1926; *What the Doctor Thought*, 1930; *The Doctor's Second Thoughts*, 1931; and *The Doctor's Afterthoughts*, 1932. Even after the age of 90 he was an imposing figure, with his large dundreary whiskers: even at that age he preferred stairs to lifts.

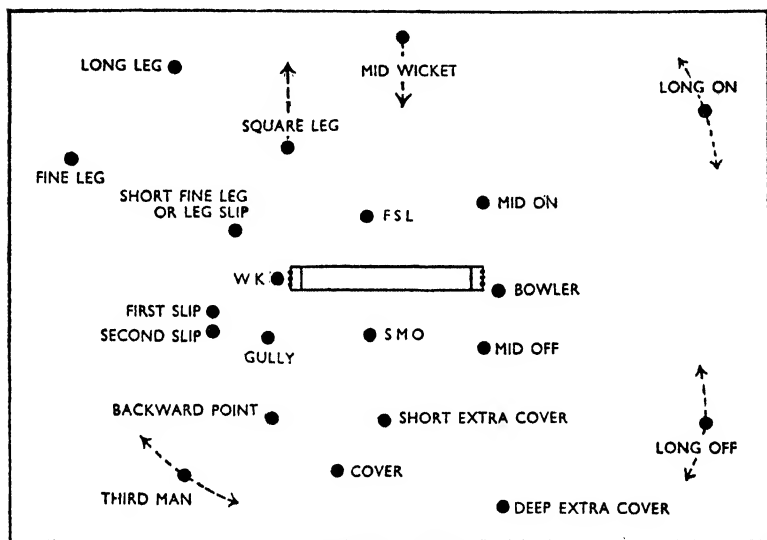
Cricket, name applied to members of the family of orthopterous insects known as Gryllidae, which is very closely allied to locust family. The species are noted for their long and slender antennae, hind legs formed for jumping, wings folded closely lengthwise, tarsi usually three-jointed, and a long ovipositor in all the females but those of the sub-family Gryllotalpinae. Many of the species are wingless, and it is the males only which make a chirping sound by rubbing the wing-covers on one another. They are widely distributed, and all are herbivorous but the carnivorous Gryllotalpides, *Gryllus campestris*, the field C.; *G. domesticus* or *Achetia domestica*, the house C. (Milton's 'cricket on the hearth'); and *Gryllotalpa vulgaris*, the common mole-cricket, are well-known representatives of the family.

Cricket, outdoor game played on grass with a wooden bat and hard ball, normally between 2 teams of 11 players. There is no limit to the size of the ground. Two wickets are pitched 22 yds apart, each measuring 9 in. wide and consisting of 3 stumps 28 in. high, surmounted by 2 balls each 4½ in. long. The ball, composed of layers of cork bound with worsted yarn and covered with hide, weighs 5½-5½ oz. and measures 8½-9 in. in circumference. The bat may not measure more than 38 in. long by 4½ in. wide. The captains toss for the choice of innings. The teams bat in turn; the winner is the side making the most runs. One of the batting side occupies each wicket and a run is made when they change ends, each having to make good his ground by placing his bat or person over a crease drawn 4 ft in front of each wicket. In matches of more than one day's duration each side has 2 innings. A side may declare their innings closed even though the whole team has not batted. The fielding side consists of a wicket-keeper and 10 other fielders of whom one bowls. The remaining fielders are placed at the discretion of the captain to suit different bowlers, whose deliveries vary in speed, flight, and spin (see diagram of fielding positions). The ball is bowled alternately from each wicket in series of 6 deliveries (in Australia 8) called *overs*; a *maiden over* is one in which no run is scored. A player may not bowl 2 consecutive overs. The batsman receiving the ball tries to strike it so as to make as many runs as possible before it is retrieved. A hit to the boundary counts 4 runs; clean over the boundary, 6. Runs may be conceded by the fielding side by

byes and leg-byes, or by the bowler delivering wides or no-balls. A batsman may be out in 9 different ways: (1) bowled: the wicket is broken by the bowler's delivery, or the batsman plays the ball on to his wicket; (2) caught: the fielder takes the ball direct from a stroke off the bat or hand before it touches the ground; (3) if he handles the ball in play; (4) if he wilfully hits the ball twice except in defence of his wicket; (5) if he hits his wicket; (6) l.b.w.: if he intercepts with his body a ball which, in certain conditions, would have hit the wicket; (7) if he obstructs the field; (8) run out: if, before he has made good his ground in attempting a

run, the wicket is broken by the ball held or thrown in by one of the fieldsmen; (9) stumped: if in receiving a ball his wicket is broken while he is out of his ground otherwise than in attempting a run. If a player is injured a substitute may field in any position at the discretion of the opposing captain, but he may not bowl or bat. A disabled batsman may have a runner. There are 2 umpires who are the sole judges of play. They may order a player out only after an appeal by the fielding side. The laws of C. are constantly under review; a new code was approved in 1947 and amended in 1952 and 1957. The current official code may always be obtained from the M.C.C.

History of cricket. Its name probably originated from the Anglo-Saxon word *crice*, meaning a shepherd's staff, and the first players were the shepherds of SE. England, who used their crooks as bats and the wicket gate and movable ball of the sheep pens as a target for the bowlers. Early C. was a rural pastime mainly confined to boys. At Guildford court in 1598 a witness testified that C. was played by



FIELDING POSITIONS FOR A RIGHT-HANDED BATSMAN

The diagram is not a field setting, but shows the positions in which the nine fieldsmen, apart from bowler and wicket-keeper, can be disposed.

WK, wicket-keeper; FSL, forward short leg or silly mid-on; SMO, silly mid-off.

run, the wicket is broken by the ball held or thrown in by one of the fieldsmen; (9) stumped: if in receiving a ball his wicket is broken while he is out of his ground otherwise than in attempting a run. If a player is injured a substitute may field in any position at the discretion of the opposing captain, but he may not bowl or bat. A disabled batsman may have a runner. There are 2 umpires who are the sole judges of play. They may order a player out only after an appeal by the fielding side. The laws of C. are constantly under review; a new code was approved in 1947 and amended in 1952 and 1957. The current official code may always be obtained from the M.C.C.

the boys of the grammar school there about 1550; by 1657-8 it had advanced sufficiently for a mention by Edward Phillips in his *New World of Words* and in *The Mysteries of Love Eloquence*, while the biographer of the Rev. Thomas Wilson complains that c. 1640 Maldstone was a 'very prophane town' because C. and other sports might be seen there 'openly and publickly on the Lord's Day.' About this time C. attracted a certain amount of litigation, for matches were played for high stakes and had to be regulated by articles of agreement. The *Foreign Post*, 7 July 1697, contains the earliest extant press notice, reporting a match in Sussex. In 1706 Wm Goldwin

pub. a poem in Lat. describing a game whose conditions differed little from those settled by the committee who laid down the first universal code of laws in 1744. The first 'county' match was between Kent and London in 1719; in 1735 the Prince of Wales and Lord Middlesex promoted 2 matches for £1000 each. In 1744 the earliest 'grand' match of which the full score survives, was played between Kent and All England at the Artillery Ground, Finsbury. At that time Kent and Sussex vied with each other for cricketing honours, but about 1750 Hants came to the fore when a club was founded at Hambledon which, supported by the great patrons of C., took the lead in ruling and developing the game. Hambledon produced David Harris and Wm Beldham, the best bowler and the best batsman of the 18th cent. In those days runs were recorded by notches cut on a stick. The wicket consisted of 2 stumps (the third stump was added in the late 1770's). Until about 1770 bats retained the curve of the early shepherds' crooks, but with an advance in technique to counter the invention of 'length' bowling, they gradually straightened. Modern C. bat blades are made of willow (*Salix caerulea*) with handles of compressed cane and rubber, but the early bats were in one piece. In 1787 the Marylebone Cricket Club was founded on a ground procured by Thomas Lord in Dorset Fields. In 1808 he leased a second ground at Regent's Park, to which the club moved in 1811, but in 1814 the Regent's Canal project necessitated a final move to St John's Wood. From its formation M.C.C. assumed control of the game and Hambledon fell into decline. M.C.C. is still responsible for alterations in the laws of C., which, after consultation with overseas bodies, must be approved by two-thirds of the members at a special meeting. Despite its responsibilities M.C.C. remains a private club of which membership is acquired by proposal after the age of 17; such is the demand that election may take some years. A number of distinguished players are honorary cricket members. The first major alteration in the laws for which M.C.C. was responsible was the licence given to the bowler to raise his arm as high as the shoulder and bowl round-arm. Formerly he was compelled to deliver the ball underarm and the new method had for years been the subject of heated argument. The concession, however, was but the prelude to the legalising of overarm bowling in 1864. The early Victorian period saw the introduction of protective clothing and a great advance in technique and organisation and in the status of the professional cricketer. The first of the modern co. clubs (Sussex) was formed in 1836; in 1845 *I Zingari*, first of the wandering clubs, was founded, and a year later the earliest 1st-class touring side, the All England XI, took the field under Wm Clarke of Nottingham. In 1859 Clarke's successor, George Parr, joined with John Wisden in leading a pioneer tour to N. America, which foreshadowed regular

international C. Visits of Eng. teams to Australia in 1861-2 and 1863-4 were reciprocated in 1868 when a team of Victorian aborigines toured England. By 1877 a representative Australian XI playing at Melbourne in the first test match were strong enough to beat an Eng. side under James Lillywhite, and this encouraged the Australian C. authorities to send an official team to England in 1878. This team dismissed a strong M.C.C. side at Lord's for 33 and 19 runs, but no test match was played; the first test in England was in 1880. Australian visits followed biennially and in 1882 her splendid but unexpected victory at the Oval inspired a journalist to write a mock obituary notice of Eng. C., in which he coined the term *the Ashes* (a.v.). In 1909 the Imperial Cricket Conference was set up with England, Australia, and S. Africa as founder members, and these countries played a series of triangular tests in England in 1912. The conference now includes W. Indies, New Zealand, India, and Pakistan, who all play test C. In England test teams are selected by the Board of Control for Test Matches in England; since 1903 official Eng. tours overseas have been the responsibility of M.C.C. The test series in Australia in 1932-3 was marked by the so-called 'bodyline' bowling controversy caused by the England fast bowlers, notably H. Larwood, bowling to a packed field on the leg side. This resulted in the introduction of legislation against the persistent bowling of fast short-pitched balls at the batsman standing clear of his wicket.

Of recent years alterations in the laws have been concerned mainly with the l.b.w. and no-ball laws. The provision of a new ball in 1st-class C. has also been under review.

Organisation of first-class cricket. A first-class match is one of 3 or more days' duration between 2 teams of eleven players officially adjudged first class. Test matches are played between the 7 countries composing the Imperial Cricket Conference and are of 5 or 6 days' duration according to the playing hours in the different countries. The governing body in each country decides which teams are first class. In England, Oxford and Cambridge Univs., Gentlemen and Players, and other representative sides are first class, and there are 17 first-class cos. which compete in the co. championship. These are: Derbyshire, Essex, Glamorgan, Gloucester, Hants, Kent, Lancs, Leicester, Middx, Northants, Notts, Somerset, Surrey, Sussex, Warwick, Worcester, and Yorks. The co. championship was instituted in 1873, when 9 cos. competed. The most successful co. has been Yorks; Surrey is the only co. which has won more than 4 years in succession. Each co. plays 28 matches. The result of the Championship is decided on a points system which is revised from time to time: 12 points are scored for a win; 6 to each side for a tie, and 6 to the side batting in the 4th innings in a drawn match in which the scores are equal. Points are also

awarded to the losers if they led on the 1st innings and to the side leading on the 1st innings in a drawn game. In 1957 an experimental rule awarded bonus points to the side leading on the 1st innings if they scored more runs per over than their opponents. In a match limited to 1 innings the leading side scores 3 points. All games are included in the Championship Table even though no play has been possible. Players must qualify to play for their co. by birth, by residence, or by special registration. The minor counties championship, played between the remaining co. and 2nd elevens of some first-class co., is not first class, the matches being of 2 days' duration. In 1904 the Advisory County Cricket Committee was formed to consider matters arising out of co. and other C. In all countries matches of 3 or more days' duration by official touring sides or by sides representing states or provs. affiliated to the governing body against other first-class sides are deemed first class. So are matches for the Sheffield Shield (Australia), Currie Cup (S. Africa), Plunket Shield (New Zealand), Ranji Trophy (India), and Quaid-i-Azam Trophy (Pakistan).

Overseas Cricket: Australia. Governing body, Australian Board of Control for International Cricket; original member of Imperial Cricket Conference (1909). First-class matches are played between New S. Wales, Victoria, S. Australia, Queensland, and W. Australia for the Sheffield Shield (presented by Lord Sheffield in 1892 and originally competed for by New S. Wales, Victoria, and S. Australia). Australian C. is highly organised in grades, so that by promotion any cricketer may reach the highest grade and attract the notice of state or international selectors. The earliest inter-state match was between New S. Wales and Victoria at Melbourne, 1858. Melbourne also staged the first test match against England in Mar. 1877. Test matches are now played at Melbourne, Sydney, Adelaide, and Brisbane. In 173 matches (1877-1956) England has won 62, Australia 70, and 41 have been drawn. In V. Trumper (q.v.), brightest of a galaxy of stars in the early 1900's, and Sir Donald Bradman (q.v.), C.'s most prolific run-getter, Australia has produced two of the world's finest batsmen. Other great batsmen have been W. L. Murdoch (like Bradman also a fine captain), S. E. Gregory, V. Ransford, C. G. Macartney, W. Bardsley, W. H. Ponsford, A. Jackson, W. M. Woodfull, S. J. McCabe, A. L. Hassett, and the left-handers C. Hill, J. Darling, A. Morris, and R. N. Harvey. F. R. Spofforth (q.v.), the 'Demon Bowler,' has been ably succeeded by such players as Turner and Ferris, H. Trumble, C. V. Grimmett, A. G. Mailey, E. A. McDonald, W. J. O'Reilly, W. A. Johnston, and R. Lindwall, and such great bowlers as G. Giffen, M. A. Noble, W. W. Armstrong, J. M. Gregory, and K. Miller have also been notable batsmen. The leading wicket-keepers have been J. M. Blackham, J. J. Kelly, H. Carter, and W. A. Oldfield, whose 90 test dismissals

are nearly double those of his nearest Australian rival.

South Africa. Governing body, South African Cricket Association; original member of the Imperial Cricket Conference (1909). C. is said to have been introduced in 1790. At the time of the visit of the first Eng. team in 1888-9, Sir Donald Currie presented a cup for the team which showed the best form against the visitors. This cup is the prin. S. African C. trophy and is now competed for by Natal, Transvaal, W. Prov., Orange Free State, E. Prov., Rhodesia, Border, N.E. Transvaal, and Griqualand W. The first match between England and S. Africa was in 1888-9, but though the first S. African team visited England in 1894 no tests were played in England until the visit of the great S. African side of 1907. The record between the two countries (1888-1955) is: 89 matches; England won 42, S. Africa 17, 30 drawn. Test grounds are at Johannesburg, Cape-town, Durban, and Port Elizabeth. Johannesburg has had 3 test grounds: the old Wanderers' ground, taken over for railway development after the Second World War, Ellis Park, in use until 1956, and now the new Wanderers' ground outside the city. Against England at Durban in 1939 S. Africa staged the longest test match ever played. The game was unfinished after 10 days, when the Eng. team had to leave for home (scores: S. Africa 530 and 481; England 316 and 654 for 5). Early in the present cent. S. Africa produced some outstanding bowlers, including R. O. Schwarz, E. A. Vogler, G. C. White, and G. A. Faulkner, early exponents of 'googly' bowling. Leading batsmen have been A. D. Nourse (father and son), H. W. Taylor, H. B. Cameron, and B. Mitchell.

West Indies. Governing body, West Indies Cricket Board of Control; joined the Imperial Cricket Conference, 1936. For geographical reasons early C. was very localised. First intercolonial match was played at Bridgetown between Demerara and Barbados, 1865. In 1866 a W. Indies team visited N. America and encouragement was given by the visits of the two teams from England in the late nineties. The first W. Indies team toured England in 1900 under R. S. A. Warner. A quadrangular tournament is played between Barbados, Trinidad, British Guiana, and Jamaica. W. Indies played her first test in 1928. Test grounds are at Bridgetown, Port of Spain, Georgetown, and Kingston. C. personalities include L. S. Constantine and his son L. N., and the prolific batsmen G. Headley, C. L. Walcott, F. M. Worrell, and E. Weekes. Many leading W. Indies players appear in Eng. league C.

New Zealand. Governing body, New Zealand Cricket Council; joined the Imperial Cricket Conference in 1926. C. was played there before 1835; the first inter-prov. match, Wellington v. Auckland at Wellington, was in 1860. In 1864 the visit of George Parr's Eng. team inspired a C. fête at Dunedin, where

teams from Southland, Canterbury, and Otago played against the visitors; 1878 saw the first visit of a team from Australia, and a New Zealand tour in Victoria. In 1906-7 Lord Plunket presented a shield for competition among the major associations, those now competing being Auckland, Wellington, Canterbury, Otago, and Central dists. In 1910 Lord Hawke presented a cup for competition among minor associations. New Zealand played her first test 1929-30; her test grounds are at Christchurch, Wellington, and Auckland. In C. S. Dempster, M. P. Donnelly, and B. Sutcliffe she has produced 3 outstanding batsmen.

1932; test grounds are at Bombay, Calcutta, Madras, New Delhi, and Kanpur. The development of Indian C. owes much to the success of her leading player, K. S. Ranjitsinhji (q.v.), whose nephew, K. S. Duleepsinhji, followed in his steps. The Nawab of Pataudi was a fine batsman who distinguished himself for Oxford and captained the 1946 team in England. V. Hazare and V. Merchant, also fine bats, have each played in 30 tests, and V. Mankad, who is seen in Lancs league C., has represented India 35 times.

Pakistan. Governing body, Board of Control for Cricket in Pakistan; joined



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WORCESTERSHIRE V. SOUTH AFRICANS AT WORCESTER

A general view of the match in progress, with Worcestershire batting.

India. Governing body, Board of Control for Cricket in India; joined the Imperial Cricket Conference in 1926. C. was introduced into India by the military in the 18th cent. Parsees were the first of the Indian peoples to take to the game and they formed the Oriental Club in Bombay in 1841; in 1861 the Hindus formed the Bombay Union. Two Parsee teams visited England in the 1880's, and in 1892-3 Lord Hawke took an Eng. team to India. In 1907 the first triangular tournament was played between Parsees, Hindus, and Europeans; the tournament was enlarged in 1912 to include the Mohammedans. An inter-prov. tournament for the Ranji Trophy was instituted in 1934. India played her first test in

the Imperial Cricket Conference in 1952. Played first series of official tests v. India 1952-3; toured England 1954. In 1953-4 a national championship was estab. for the Quaid-i-Azam Trophy. Test matches have been played at Karachi, Lahore, Dacca, Bahawalpur, and Peshawar.

Other Countries. Although the first Eng. overseas tour was to N. America, C. there has not attained a wide popularity, though a fair amount of club C. is played, especially in Canada. The services have introduced the game in many other parts of the commonwealth; in Ceylon, especially, it has taken root. In Europe C. is played in Holland and Denmark.

Great Cricketers and Records. The most famous cricketer remains Dr W. G. Grace

(q.v.), who dominated the C. field for upwards of 40 years. His 126 centuries and 54,896 runs in first-class C. have been surpassed, but in his day his achievements outstripped all other batsmen's; as a bowler his 2876 wickets have only been exceeded by 6 other players. J. B. Hobbs (q.v.), Surrey, the greatest scorer in first-class C. made 61,237 runs and 197 centuries; he is followed by F. E. Woolley (q.v.), Kent, with 58,969 runs and 145 centuries (Woolley also took 2068 wickets); E. Hendren, Middx; 57,610 runs; C. P. Mead, Hants, 55,060; W. G. Grace, Gloucester, 54,896; W. R. Hammond (q.v.), Gloucester, 50,493; and



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PETER MAY

H. Sutcliffe (q.v.), Yorks, 50,135. The most prolific scorer outside England was D. G. Bradman, whose 28,067 runs (117 centuries) were made in the lighter C. programmes of Australia. His score of 452 for New S. Wales v. Queensland, 1929-30, is the highest in first-class C. The individual record in England is A. C. MacLaren's 424 for Lancs v. Somerset, 1895. B. B. Ninbalkar made 443 not out for Maharashtra v. W. India States in 1948-9, and W. H. Ponsford (Victoria) twice exceeded 400. The record for a test innings is L. Hutton's (q.v.) 364 v. Australia, 1938. The world partnership record is 577 for the 4th wicket by V. Hazare and G. Mahomed for Baroda v. Holkar, 1946-7; the Eng. record is 555 for the 1st wicket by P.

Holmes and H. Sutcliffe, Yorks v. Essex, 1932; for Barbados in 1945-6 F. M. Worrell and C. L. Walcott made 574 for the 4th wicket. B. Sutcliffe and D. D. Taylor (Auckland) made opening stands of 220 and 286 v. Canterbury, 1948-9. Two separate hundreds in a test match have been made by H. Sutcliffe, C. L. Walcott, and G. Headley. W. R. Hammond made 2 separate hundreds in a first-class match 7 times; he also holds the record for runs scored in tests (7249) and for the number of tests played (85). L. Hutton made 6971 runs in 79 tests. Players who have exceeded 1000 runs in a season more than 20 times are W. G. Grace, F. E. Woolley, C. P. Mead, J. B. Hobbs, E. Hendren, W. G. Quail, H. Sutcliffe, D. Denton, W. R. Hammond, and W. Rhodes. Other leading batsmen have been: G. Parr, A. Shrewsbury, and G. Gunn of Notts; R. E. Foster (Worcester), who made 287 for England v. Australia, 1903-4; R. H. Spooner (Lancs), who made 189 in his first test v. S. Africa, 1912; G. L. Jessop (Gloucester), whose feats of rapid scoring included 101 in 40 min. v. Yorks, 1897; C. B. Fry (q.v.) (Sussex), whose 6 successive hundreds in 1901 is a record equalled by D. G. Bradman in 1938-9; K. S. Ranjitsinhji (q.v.) (Sussex); F. S. Jackson (q.v.) (Yorks); P. F. Warner (q.v.) (Middx); R. Tyldesley and E. Tyldesley (Lancs); A. Sandham (Surrey), who shared with J. B. Hobbs opening partnerships exceeding a hundred 63 times; and L. Ames (Kent), who also holds the wicket-keeping record for the most stumpings (413) and the most dismissals in a season (127). The Surrey wicket-keeper, H. Strudwick, holds the overall record of 1493 dismissals (1235 caught). F. E. Woolley's 913 catches are the most by a fielder other than a wicket-keeper. In bowling, J. C. Laker's achievement in taking 19 wickets in the 4th test v. Australia, 1956, is unlikely to be bettered. This was the first time a bowler had taken all 10 wickets in a test. Laker also holds the record of 46 wickets in a test series; another Surrey bowler, A. V. Bedser, took 39 v. Australia in 1953, and his 236 test wickets are the most so far recorded. S. F. Barnes took 189, including 17 in one match v. S. Africa, 1913-14; M. W. Tate took 155, H. Verity 144, including 15 in one match v. Australia in 1934. W. Rhodes took 15 against Australia at Melbourne, 1903-4. Rhodes also heads the bowling aggregates with 4187 wickets; 23 times he exceeded 100 wickets in a season and he achieved the 'double' 16 times. His Yorks colleague, G. H. Hirst, was the only player to make 2000 runs and take 200 wickets in a season (1906); J. H. Parks (Sussex) is the only player to exceed 3000 runs and 100 wickets (1937). The most wickets taken in a season were 304 in 1928 by A. P. Freeman (Kent), whose career aggregate was 3776. Other players with more than 3000 are C. W. L. Parker (Gloucester), 3278, and J. T. Hearne (Middx), 3061. Parker is one of the few who performed a hat-trick twice in a match, the others being A. Shaw (Notts), T. J. Matthews

(Victoria), R. O. Jenkins (Worcester), and A. E. Trott (Victoria and Middx), whose 4 wickets with 4 balls followed by 3 with 3 balls in the same innings (Middx v. Somerset, 1907) is unique. The record for hat-tricks is held by D. V. P. Wright (Kent). One of the most remarkable analyses was H. Verity's 10 wickets for 10 runs (Yorks v. Notts, 1932); G. Geary took 10 for 18 (Leicester v. Glamorgan, 1929). Other notable bowlers have been B. J. T.



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J. C. LAKER BOWLING AGAINST THE AUSTRALIANS

Bosanquet (Middx), inventor of the 'googly'; F. R. Foster (Worcester), who took 32 Australian wickets in the 1911-12 tests; J. Briggs (Lancs); G. Lohmann (Surrey); R. Peel (Yorks); C. Blythe (Kent); A. S. Kennedy (Hants); T. W. Goddard (Gloucester); and the Notts fast bowlers, H. Larwood and W. Voce. The highest innings total in first-class C. is 1107 by Victoria v. New S. Wales, 1926-7; in England the highest is 903 for 7 wickets by England v. Australia, 1938;

Australia's highest test score is 729 for 6 at Lord's, 1930. The lowest score is 12, by Northants v. Gloucester, 1907, and by Oxford (1 man absent) v. M.C.C., 1877. Victoria were dismissed for 15 by M.C.C. in 1903-4.

Crickhowel, tn of Breconshire, Wales, situated in the Usk valley. It possesses a Norman castle, now under the trusteeship of the parish council, and is the centre for a considerable area of the Black Mts, with fine scenery and many good walks. About 2 m. N.E. of the tn is a hill named Crug-Hywel, from which the name C. is derived. Pop. tn 1400; rural dist. (for which C. is administrative centre) 7600.

Cricklade, mrkt tn of Wilts, England, situated on the Thames at the commencement of the navigable riv., on the Rom. Ermine Street, 7 m. NW. of Swindon. It was formerly an important tn, having Anglo-Saxon associations. The industries are purely agric. It is endowed richly with charities, and possesses sev. educational establs. It is the only par. council in the kingdom to bear arms. Pop. 1500.

Crieff, police burgh of Perthshire, Scotland, lying 18 m. to the W. of Perth. Previously woollen, cotton, and linen goods were manufactured here; now the tn is the centre of a fertile and prosperous agric. area, but it is known chiefly as a health and pleasure resort because of the purity of its air. Many tourists visit the terraced lt. and Dutch gardens of Drummond Castle, the keep of which was built in 1490. Up to 1770 a great cattle fair was held at C., when its 'kind gallows' punished the highland cattle lifters. Pop. 5500.

Crikvenica, resort on the Adriatic, in Croatia, Yugoslavia. It has a fine beach. Pop. 5150.

Crillon, Louis des Balbes de Berton de (c. 1541-1615). Fr. soldier, called 'le Brave,' served his apprenticeship for war under Francis, Duke of Guise. The valour displayed by C. at the siege of Calais and the taking of Guines became almost legendary. At Dreux and Montcontour he again distinguished himself, and at the battle of Lepanto, in spite of wounds, he was chosen to bear the tidings of victory to the king. He fought at the siege of La Rochelle, 1573, and subsequently under Henry IV.

Crime. A C. may be defined as an act prohibited by law which is punishable by some sanction applied by courts of criminal jurisdiction (e.g. central criminal courts, quarter sessions, magistrates' courts). Some criminal acts may also be the subject of civil proceedings; for instance, a motorist found guilty of dangerous driving may subsequently be sued for damages for negligence in a civil court. No act, however anti-social, may be punished as a C. unless it is prohibited by law (*nulla poena sine lege*). This fundamental principle of Eng. criminal law, which is complementary to the maxim that ignorance of the law is no excuse, is not to be found in the Soviet legal system, under which acts no

expressly forbidden by law but regarded as inconvenient to the authorities, may be punished as 'crimes against the people.' Although the detailed content of their legal systems may vary, all states treat as C.s those acts which they regard as subversive of public order and stability. Thus, treason, insurrection, stealing, and physical assault are criminal offences in all highly developed political communities. Although their methods may change, the thief and robber are criminals to be found in all ages. In the modern Eng. magistrates' court, which deals with the majority of offences, the motorist whose activities affect the public safety, engages much of the attention of the criminal law. An act does not constitute a C. according to its heinousness, which merely determines the penalty for its commission. Despite the widely differing punishments which they attract, murder, larceny, dangerous or careless driving, adulteration of milk, and riding a bicycle without lights are all C.s. If the number of offences increases at any given time, it should not be assumed that a 'crime wave' is in progress. The increase may be accounted for by a burst of enthusiasm by the traffic police, or improved methods of C. detection. Governmental action may affect C. statistics; whereas the abolition of petrol rationing released more motorists on to the roads, thus giving greater opportunities for traffic offences, the removal of food rationing put 'black marketeers' out of business. Even so, a detailed examination of the criminal statistics for England and Wales for 1955 will reveal that the number of C.s involving dishonesty has increased since 1938.

In order to see the complete pattern of criminal activity in England and Wales, it is necessary to examine not only detailed statistics of different types of C. and the number of persons found guilty, but also the number of offences known to the police. In 1955 the total number of persons found guilty of all offences in England and Wales was 735,288. Traffic offences tried summarily (i.e. by magistrates) accounted for 407,815 or 55.5 per cent of the total. In 1938, there were 238,220 indictable offences (i.e. those triable by a jury) known to the police, of which 50.1 per cent were cleared up. In 1955, however, of 438,085 such offences, only 48.7 per cent were cleared. This disturbing discrepancy between the numbers of offences known and those cleared up suggests that in 1955 over 51 per cent who committed C.s 'got away with it,' but as the number of unpunishable C.s per person cannot be assessed, the percentage of persons concerned might be considerably reduced. Moreover, a person found guilty of an offence frequently asks the court when passing sentence to take into consideration other offences committed by him but for which he has not been prosecuted; he is not later charged with these offences, which are wiped off the police record of offences which have not been cleared up. The overall increase of C. since 1938 is alarming, even

allowing for the unsettling conditions of war-time and of the immediate post-war years. Although the numbers of offences declined as the life of the nation returned to normal, they have never fallen to their pre-war level.

TYPES OF CRIME.—Although traffic offences accounted for 55.5 per cent of the 735,288 persons found guilty in 1955 of offences of all types, this article deals only with those C.s involving dishonesty or violence. The most common offence was larceny of which 63,438 persons (9.3 per cent of the total) were found guilty. Offences of larceny known to the police in 1938 numbered 199,951 and increased to 295,035 in 1955. Although shortages of most goods stimulated thefts during the war, the numbers rose alarmingly in the post-war years, reaching a peak in 1951. In 1938 56,092 persons were found guilty of larceny and similar offences, and in 1955, 68,438. It is particularly disturbing to note that in 1955 1 in every 7 persons found guilty of larceny was convicted of theft from his employer. The number was 9431, compared with 3597 in 1938. Shoplifting has shown a marked increase on pre-war figures (1938, 7956; 1955, 10,512). In both years, the figures for other simple and minor licences accounted for about 50 per cent of the total in this category of offence. The comparable figures for offences of 'breaking and entering' known to the police and cleared up show a similar upward trend; 1938, 49,184; 1955, 74,907. The highest figure was 112,665 in 1948. In 1938, 10,853 persons were convicted, and in 1955, 16,411. Two major factors in the post-war increase in larceny and similar C.s are probably (a) a general lowering of moral standards induced by shortages of food, clothing, etc., and (b) a growing desire to 'get rich quick' with the minimum of effort, an attitude typified by the 'spiv.' The shortage of lead in the immediate post-war years explains a startling increase in lead-stealing (the stripping of lead from roofs became a profitable C.). The decline in this class of offence is probably due not so much to the severity of sentences imposed by the courts, but to the improved legitimate supply of lead which has consequently caused a slump in demand for the 'black market' product. The offence of receiving goods knowing them to have been stolen has increased its popularity among criminals since 1938. The offences known to the police have increased from 3433 in 1938, to 76,016 in 1955. In the latter year, 4366 persons were convicted. This is a surprisingly small number considering that if a person is found in possession of goods which are proved to have been recently stolen, the presumption (which he has to rebut) is that he received them, knowing them to have been stolen. This is contrary to the usual principle in Eng. criminal law that the prosecution must prove positively all the ingredients in the C. C.s involving fraud or false pretences have risen from 16,097 in 1938 to 22,956 in 1955; in those years the number of persons convicted were

2749 and 3511 respectively. The peak post-war years for these so-called 'white collar crimes' were 1948, 1951, 1952, and 1953. Those who commit this class of offence tend to have a standard of intelligence rather higher than that of the average criminal. Offences of violence against the person have increased steadily from 2721 in 1938 to 7884 in 1955. Although this type of offence is only a small proportion of all C.s committed (the percentage of those convicted in 1955 was 0.7 per cent of the total), the steady, unaltered increase in numbers is alarming. In 1938 10 per cent of the offenders found guilty of this type of C. was in the 17-21 age group; by 1955 the percentage had risen to 19. The number of persons convicted in 1955 for malicious wounding and like offences is nearly 4 times as great as that in 1955. The growth of the 'teddy boy' cult is frequently blamed for C.s of violence. In recent years an increasing number of working-class boys have affected an exaggerated Edwardian style of dress and a foppish hair-cut. The vast majority are, in fact, law-abiding citizens, seeking escape from the tedium of drab surroundings by adopting a form of self-expression copied from their film-star heroes. Yet because some gangs of youths dressed in this fashion have committed C.s of violence, the term 'teddy boy' has become to connote a young criminal. It is perhaps too early to determine whether hooliganism is, like calf love, now one of the symptoms which afflict certain adolescents in every age, or is merely a malady peculiar to a generation unsettled in childhood by war-time disturbances and in adolescence by the prospect of national service. Another factor which cannot yet be accurately assessed is the damaging effect of the high divorce rate just after the war on the children of broken marriages.

Although murders attract considerable newspaper publicity, they are comparatively rare. The number known to the police has remained curiously consistent over many years; in 1955 it was 125. Two of these were reduced to manslaughter as the result of court proceedings in 1956. The number of offenders known or suspected to have been concerned in 121 of the remaining 123 murders was 101, the murderers in the other 2 cases being undetected. One suspected murderer was detained in a mental hospital and was not prosecuted, and 32 committed suicide before arrests could be made; these 33 persons were suspected of being concerned in the murder of 46 victims. Of the persons proceeded against, 1 was certified insane before trial, 12 were found insane on arraignment, and 27 were found guilty but insane. These 40 persons were responsible for 47 of the victims. During 1955, 9 persons were executed. From 1955 until July 1957 no person found guilty was hanged because of the passage by the Commons of a private member's bill to abolish cap. punishment. The bill was rejected by the House of Lords, and, because of the bitter controversy aroused

by this rejection, the gov. sponsored Homicide Act, 1957, was passed. The provisions of this act are described in the article CAPITAL PUNISHMENT; *see also* MURDER.

The number of sexual offences known to the police has increased from 5018 in 1938 to 17,078 in 1955.

AGE GROUPS OF OFFENDERS FOR PRINCIPAL INDICTABLE OFFENCES IN 1955.—34 per cent of the persons found guilty of larceny were over 30 years of age, and 20 per cent were in the 21-30 age group. 20 per cent were between 8 and 14 (no child under 8 can be charged with a C.). Petty pilfering no doubt explains this surprising large juvenile contribution to the total quota of larcenies. Only 12 per cent of the persons found guilty of 'breaking and entering' were over 30 years of age; 30 per cent being between 8 and 14 years and 22 per cent between 14 and 17; mischievous propensity, the desire for adventure, and nimbleness of limbs must surely explain the attraction of the very young to this type of offence. Receiving stolen property entails less risk but requires a ready market for disposal if the C. is to achieve its purpose. It is not therefore surprising that 48 per cent of convicted receivers of stolen property were over 30 years of age. Only 7 per cent were in the 17-21 age group, but 26 per cent were between 8 and 17 years of age. Frauds and false pretences require experience and the greater opportunities of successful accomplishment more readily available to older men. 69 per cent of those convicted were over 30 and 23 per cent between 21 and 30. The 3 age groups between them contributed a modest quota of 8 per cent.

Robbery (q.v.), which requires the audacity and physical strength of younger men, was largely the province of young men. Only 13 per cent of offenders were children under 14; 17 per cent were between 14 and 17 and 20 per cent were between 17 and 21. 38 per cent were between 21 and 30. The offence has apparently lost its allure for men over 30 (only 12 per cent were in this age group). Men with a number of previous convictions and committed to a career of C. no doubt realise that they can expect long sentences if found guilty of this particular offence. Of persons found guilty of other offences involving violence against the person, the percentages for the 17-21, 21-30, and over 30 age groups are respectively, 19, 36, and 36.

TREATMENT OF OFFENDERS.—Criminologists differ as to the emphasis to be placed on the retributive, deterrent, and reformatory aspects of punishment. The theory that punishment is intended merely as expiation is not subscribed to by the more progressive penologists. Heavy sentences are often imposed by judges in the hope that potential offenders may be deterred. The most positive theory of penology is aimed at the reform of the criminal. The most optimistic criminologists are forced to admit that modern methods have so far failed to influence persistent offenders. The Crim-

inal Justice Act, 1948, which provided extended forms of imprisonment for such offenders, has launched what the report of the prison commissioners for 1955 described as 'a new and two-pronged attack on the problem of recidivism.' The 'prongs' are *corrective training* and *preventive detention*, which are described in the section of the Criminal Justice Act in the article on CRIMINAL LAW. In order to deflect persons of the 14 to 17 and 17 to 21 age groups from a life of C., they may be sent to a detention centre (at present available for males only) where they receive a 'short, sharp shock' for up to 6 months in 'glass house' conditions. The lesson is likely to be more salutary if the detention centre is the offender's first experience of institutional treatment. The act curiously makes no provision for compulsory after-care of those who have served a term in such a centre. Borstal training (q.v., see also CRIMINAL LAW) is available for young persons aged 16-21. Prediction studies of Borstal boys were recently made by Dr H. Mauheim and Leslie Wilkins, and pub. by H.M.S.O. They selected a sample of 1 in every 3 entrants to Borstal institutions in 1946-7, the total sample consisting of about 700 cases of which they used 385 to build the prediction equations. The success rate among those recommended by the Prison Commissioners for Borstal training was 49 per cent, whilst it was 46 per cent among those sent to Borstal against the recommendation of the Commissioners. The authors, without claiming the individual judgment of the court in deciding sentences, do suggest that such tables which condense so much information covering a wide field could serve as a useful adjunct.

During 1955, 16,547 males and 1127 females were imprisoned; the comparable figures for 1938 were 12,554 and 1074 respectively. In 1938, 11,737 males and 2176 females were fined; in 1955 the figures were 30,962 and 4711.

The number of persons placed on probation (q.v.) has shown no significant change in the years under review. In 1938, 21,820 males and 3525 females were placed on probation, compared with 21,340 and 4552 in 1955. It is disappointing that probation has not been more widely used, having regard to the expansion of the probation service and the greatly improved calibre and ability of the officers. The probation system, which was introduced by the Probation of Offenders Act, 1907, was designed to allow many of the persons appearing before the court to have 'another chance.'

CAUSES OF CRIME.—Various explanations have been offered at different times of the reasons for C. Poverty has, in the past, often been pointed at as a cause of C., but the benefits of the welfare state and full employment have not reduced the volume of offences. 'Penny dreadfuls,' the cinema, and 'horror comics' have been successively blamed for juvenile C. Emotional and mental instability have also been selected as possible causes. Sir

Cyril Burt has suggested that C. is never due to one single cause but to a number of factors, all of which also conduce to the behaviour of non-criminals. Human behaviour springs from a complex pattern, and not from the artificial isolation of 1 act. It was suggested in debate in the House of Commons in June 1957 on penal reform that the gov. should sponsor scientific research into the cause of C. and the curing of offenders. Unless and until C. is treated as a mental disease, offenders must, if sane, continue to be held legally responsible for their criminal acts and to suffer the consequences. See also CRIMINOLOGY (and books quoted at the end of this article); PENOLOGY; POLICE; PRISONS.

Crimea (Tatar and Russian *Krym*), oblast of the Ukrainian Rep. comprising the peninsula of the same name (ancient *Taurica Chersonesus*), almost completely surrounded by the Black Sea and the Sea of Azov and connected with the mainland by the narrow isthmus of Perekop. It consists of lowland steppe in the N., with the Crimean Mts (highest peak Roman-Kosh, 1545 ft) along the S. coast, which has a Mediterranean climate. There are large iron-ore and salt deposits. Area 10,000 sq. m.; pop. c. 1,000,000, Russians and Ukrainians (before 1940's also Tatars, Jews, Germans, Greeks, and Bulgarians). C. has metallurgical, engineering, and food (fishing, fruit-canning, wine) industries. Wheat and tobacco are cultivated, and viticulture and horticulture practised; there is also sheep breeding. There are many health and holiday resorts (500,000 patients and tourists yearly in 1930's). The prin. tns are Simferopol' (cap.), Sevastopol', Kerch', Yevpatoriya, Feodosiya, Yalta. C. was inhabited in antiquity by Cimmerians, Taurians, and Scythians. From the 7th cent. bc the S. Crimea was colonised by Greeks (see CHERSONESE; BOSPORAN KINGDOM), and it later belonged to Rome and Byzantium, and from the 13th cent. to Venice and Genoa. From the 3rd cent. N. C. was subject to invasions by Goths (who survived there till the 16th cent.), Huns, Avars, Khazars, Pechenegs, Cumans, and in 1239 Tatars (see GOLDEN HORDE; CRIMEAN KHANATE). In 1475 S. C. was conquered by Turks, who in 1478 estab. suzerainty over the Crimean Khanate which lasted till 1774. In 1783 C. was annexed to Russia and included in New Russia (q.v.). The majority of Tatars emigrated to Turkey. In the Crimean War (q.v.) the Allies landed in C. and took Sevastopol'. In 1917-20 C. had sev. Tatar nationalist, as well as Russian Communist and anti-Communist, govs., was under Ger. occupation (1918), and witnessed many battles of the civil war. In 1921 the Crimean (Tatar) Autonomous Rep. was formed within the Russian Federal Rep. C. was again occupied by the Germans, 1941-3, and was the scene of bitter fighting (Sevastopol', Kerch', Perekop). The C. Autonomous Rep. was abolished in 1945 after the deportation of the Tatar pop. to Asiatic Russia for alleged collaboration with the Germans. The Crimean oblast was transferred to

the Ukraine in 1854. The 1957 decree on rehabilitation of deported peoples did not include Crimean Tatars. See W. Kolarz, *Russia and Her Colonies*, 1952; R. Pipes, *The Formation of the Soviet Union*, Cambridge, Mass., 1954.

Crimean War (1853-6) was brought about largely through the aggressive policy of Tsar Nicholas I of Russia, who had visions of a Russian empire embracing the whole of SE. Europe, and determined to win Constantinople. Using as his pretext an obscure quarrel in Jerusalem between Gk and Lat. Christians, Nicholas boldly claimed from the sultan a protectorate over all the Gk Christians in the Ottoman dominions, thereby hoping to make the impending war a struggle between Cross and Crescent. But the sultan issued a solemn edict to the Christians, promising them full religious liberty, and appealing to France and England for help. Both powers responded to his request, the former because it was anxious to avenge Moscow, the latter because it feared its E. possessions would be menaced were Russia allowed to reach the Mediterranean. The Manchester leaders, Cobden and Bright, courageously denounced the war in the face of a bellicose people. The actual war extended from 1853 to 1856, being terminated by the unsatisfactory Peace of Paris. There were some naval engagements in the Baltic, but the true interest of the war is concentrated round Sevastopol, the Russian stronghold in the Crimea. The allied forces were at first mustered in Varna, but in 1854 were transported to Eupatoria, after having suffered terribly through cholera. By the victory of the Alma in Sept. 1854, when the brunt of the fighting fell on the Eng., a way for the allies was cleared to Sevastopol. It was during an Oct. attack by the Russian general Menshikov upon Balaclava, the Eng. H.Q., that the Light Brigade won fame by its fatal if valiant charge through N. Valley. In Nov. the Eng. Guards and troops on the hill of Inkermann beat back the assailing Russians, but in spite of their victory dared not attempt to capture Sevastopol by storm. Accordingly the allies settled down to a winter siege. Tempests wrecked the transports bearing clothing, ammunition, etc., so that the soldiers were totally unprepared to endure the snows and bitter cold, and Florence Nightingale (q.v.), who did noble work as nurse, bore vivid testimony to the acute sufferings and deprivations and also to the patience and courage of the soldiers. Early in 1855 the Eng. commander-in-chief, Raglan, and Nicholas d. In Aug. the Fr. and Sardinians, who had joined in the war, defeated the Russians at the battle of the Chernaya, and the former captured the Malakov redoubt, though the Eng. were driven back from the Redan. In Sept. the Russians surrendered Sevastopol. By the provisions of the treaty the Russians abandoned their claim to a protectorate over the Christians, and agreed not to build any more forts on the Euxine, but recovered Sevastopol. The great powers assumed

responsibility for seeing that the Porte fulfilled its guarantees to the Christians. Navigation on the Danube was thrown open. This war demonstrated to England the folly of attempting to rehabilitate Turkey, and the crying need for reform in military organisation. See L. Tolstoy, *Sevastopol*, 1863-87; A. W. Kinklake, *The Invasion of the Crimea*, 1899; C. F. MacMunn, *The Crimea in Perspective*, 1935; and H. W. V. Temperley, *England and the Near East*, vol. 1, *The Crimea*, 1936.

Crimes, War. The laws of peace remain in force despite the state of war, though they are subject to exceptions which operate in certain circumstances and certain conditions. War sanctions by its very existence the use of force, the use of lethal weapons, the destruction of life and property. Hence many modern states have long reached an agreement by which they decided to introduce order into the chaos of war, or, in other words, to make 'laws of warfare' by way of providing a solution of the age-old conflict between brute force which knows no limits and force controlled by rules. These laws of warfare are a great compromise resulting from the conflict between the command of law and the necessities of war. Though they have been disregarded flagrantly in certain instances, they have over the past cent. done much to minimise the necessary suffering which war entails. But in recent years the emergence of such weapons of destruction as the atom and hydrogen bombs, and the rise to power of states such as Communist China, which have never formally accepted the rules laid down in earlier declarations, have made them less effective in practice.

Long before the world wars there were numerous written laws of warfare—conventions, regulations, protocols, etc.—and these together form the body of the international (written) laws of warfare. Among them are the declaration of Paris, 1856 (q.v.); the Geneva Convention, 1864, for improving the conditions of wounded soldiers; 13 Hague conventions, signed between 1899 and 1907, and various Hague declarations, e.g. that of 1899, concerning projectiles diffusing asphyxiating gases (which is confirmed and extended by the protocol of 1925); the Geneva Convention of 1929 on the treatment of sick and wounded and of prisoners of war; and the London Protocol of 1936 relating to the use of submarines against merchant vessels. But the mere fact that this body of laws does not expressly cover all crimes does not mean that the rules of warfare approve of such omitted crimes. The Fourth Hague Convention, 1907, covers omissions by saying that the powers 'are inspired by the desire to diminish the evils of war' and that 'the right of belligerents to adopt means of injuring the enemy is not unlimited' (Article 22). In short, the lack of written law is only a formal deficiency and altogether the rules of warfare must be sought in (a) the written international rules of warfare embodied in international agreements; (b) the unwritten international law, as

defined in the Hague conventions and Article 38 of the Statute of the Permanent Court of International Justice; and (c) municipal legislation—for it seems obvious from passages in the international conventions that the signatory powers undertook to translate the stipulations of the respective agreements into the language of municipal law, by their penal codes, military codes, or special legislation; and this applies not only to the contractual obligations of the signatories which form the subject of the international conventions, but also to all those rules or international laws of war which result from the 'usages established between civilised nations, from the laws of humanity, and the requirements of the public conscience,' for they are the 'silent' rules of warfare. A war crime therefore does not necessarily differ from any other crime, though a typical list of 'war crimes' was drawn up by the 'Commission on Responsibility,' which was charged with the task of investigating the matter of atrocities committed by the Central Powers during the First World War (see *American Journal of International Law*, vol. xiv, 1920). Obviously some W. C. could only be committed through the opportunity offered by war conditions; but, substantially, this does not differentiate a crime of violence committed during war from one committed in peacetime. One authority lists various elements as the essentials for qualifying 'war crimes': 'They are acts of violence (both positive and negative violence); they are committed under specially favourable circumstances created by war; committed by a special group of persons in connection with the war (e.g. army commanders, police in occupied countries, commandants of prisoner-of-war camps); committed during war; and are not covered by the exceptions provided by the international laws of warfare' (M. Lachs). Certainly the element of violence was emphasised by the Inter-Allied Conference at St James's Palace (Jan. 1942), whose delegates signed a declaration in which they affirmed that acts of violence perpetrated by the Germans and their allies and associates against the civilian pops. were at variance with accepted ideas concerning acts of war and political offences as these are understood by civilised nations, and placed among their principles the punishment of those guilty and responsible for these crimes; and they expressed their determination to see that the guilty, whatever their nationality, were sought for and handed over to justice, and that the sentences pronounced were carried out.

The defect in the past in these prohibitive provisions of international law has been that there was no court with power to try and to punish the transgressor. 'It is,' wrote Lord Simon, on the Nuremberg trial, 'the creation of the court, not the enunciation of the law, that is the novelty; and few people will feel their sense of justice outraged because when Germany collapsed the Allies decided to create such a court rather than to let those who were

guilty of such deeds violate the law with impunity.' The outcome of this decision was a charter constituting the tribunal which tried and condemned the leading Nazi criminals at Nuremberg (see NUREMBERG TRIAL). In that trial Lord Justice Lawrence disposed of the *ex post facto* pleas of the defendants, particularly as such pleas affected wars of aggression regarded as crimes. For the defendants it was urged that a fundamental principle of all law—international and domestic or municipal—is that there can be no punishment of crime without a pre-existing law. *Nullum crimen sine lege, nulla poena sine lege*. It was submitted that *ex post facto* punishment is abhorrent to the law of all civilised nations, that no sovereign power had made aggressive war a crime at the time the alleged criminal acts were committed, that no statute had defined aggressive war, that no penalty had been fixed for its commission, and no court had been created to try and punish the offenders. Lord Justice Lawrence, in delivering the judgment of the court, said that the maxim *nullum crimen sine lege* is not a limitation of sovereignty, but is in general a principle of justice. 'To assert,' he said, 'that it is unjust to punish those who in defiance of treaties and assurances have attacked neighbouring states without warning is obviously untrue, for in such circumstances the attacker must know that he is doing wrong, and so far from it being unjust to punish him, it would be unjust if his wrong were allowed to go unpunished. Occupying the positions they did in the government of Germany, the defendants, or at least some of them, must have known of the treaties signed by Germany outlawing recourse to war for the settlement of international disputes; they must have known that they were acting in defiance of all international law when in complete deliberation they carried out their designs of invasion and aggression. On this view of the case alone, it would appear that the maxim has no application to the present facts.' It was also submitted on behalf of most of these defendants that in doing what they did they were acting under the orders of Hitler, and therefore could not be held responsible for the acts committed by them in carrying out these orders. 'The fact that the defendant acted pursuant to order of his government or of a superior shall not free him from responsibility, but may be considered in mitigation of punishment' (Article 8 of the International Military Tribunal). 'The provisions of this article,' said Lord Justice Lawrence, 'are in conformity with the law of all nations. That a soldier was ordered to kill or torture in violation of the international law of war has never been recognised as a defence to such acts of brutality, though, as the charter here provides, the order may be urged in mitigation of the punishment. The true test, which is found in varying degrees in the criminal law of most nations, is not the existence of the order, but whether moral choice was in fact possible.'

Trials of war criminals began shortly

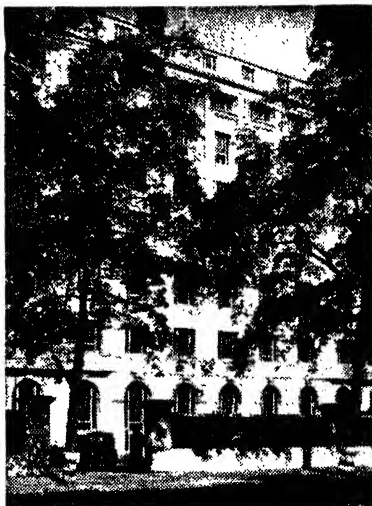
after the end of hostilities, and even in 1955 isolated cases were still being heard. Exact figures of trials and sentences are not known, since the Soviet Union has never disclosed her statistics on the subject, but some 30,000 persons were tried in Europe (excluding Russia) and the Far E., and death sentences passed on over 2000.

The evidence of repatriated Amer. and Brit. prisoners of war proved that acts of calculated cruelty and brutality were carried out by N. Korean and Chinese soldiers during the war in Korea; and in Oct. 1953 the U.S.A. asked the U.N. to examine atrocities committed by the Chinese and N. Koreans against Allied prisoners during the war. On 3 Dec. the assembly passed a resolution (opposed only by the Soviet bloc) condemning war atrocities in general and expressing grave concern at reports of such atrocities in Korea. But the perpetrators of these atrocities have, of course, never been brought to trial.

Criminal Appeal, Court of, was estab. in England by the Criminal Appeal Act, 1907. The judges eligible to sit in the court are the lord chief justice and the judges of the Queen's Bench Div. (appointed for the purpose by the lord chief justice with the consent of the lord chancellor for such period as he thinks desirable in each case). The number of judges at any sitting is three. By the above-mentioned Act the right of appeal is given to a person (a) against conviction on ground of appeal involving a question of law; (b) with the leave of the court or upon the certificate of the judge who tried the prisoner that it is a fit case for appeal, against conviction on any ground of appeal involving a question of fact alone, or a question of mixed law and fact, or any other ground which appears to the court to be a sufficient ground of appeal; (c) with the leave of the court against the sentence unless the sentence be one fixed by law. The court in any such appeal shall allow the appeal if they think that the verdict of the jury should be set aside on the ground that it is unreasonable or cannot be supported on the evidence, or that the judgment of the court before whom the appellant was convicted should be set aside on the ground of a wrong decision on any question of law, or that, for any reason, there was a miscarriage of justice. The court may, however, dismiss the appeal, notwithstanding that they are of opinion that the point raised in the appeal might be decided in favour of the appellant, if they consider that no substantial miscarriage of justice has actually occurred. On an appeal against sentence the court shall, if they think that a different sentence should have been passed, quash the sentence passed at the trial and pass such other sentence (more or less severe) warranted in law by the verdict, and this implies a power to increase the term of imprisonment given in the court below. The court shall, if they allow an appeal against conviction, quash the conviction and direct a judgment and verdict of acquittal to be entered. The principle upon which the court act is that of

attaining the end of substantial justice. They will not quash a sentence upon a mere technicality, but require proof that there is a doubt whether, had the proceedings been conducted differently, the jury would have found another verdict. In this connection it is to be noted that the court have decided that the prisoner is entitled to have his defence, however weak or improbable, included by the judge in his summing-up, and the omission of this duty by the judge is sufficient to upset the verdict on appeal. The appellant is entitled to be present on the hearing of an appeal against conviction, but not an application for leave to appeal.

Criminal Investigation Department (C.I.D.). A detective branch of the police force was formed at Scotland Yard



John H. Stone
C.I.D.

The building of the Metropolitan Police at New Scotland Yard, from the Victoria Embankment, London

as early as 1842, but the status of a separate 'department' was not given until 1878, when the C.I.D. was created under the director, Howard Vincent. The C.I.D. now operates both at New Scotland Yard and at dist. police H.Q. It is subdivided into numerous branches, among which are the Special Branch, which is concerned with the protection of State personages and with crimes directed against the State; the Central Office; the Criminal Record Office; the Finger Print Bureau; and the Flying Squad. The strength at the end of 1955 was 1442. Officers have to have at least 2 years' service in the uniform branch before appointment to the C.I.D. The C.I.D.

is noted for its excellent team work and operates far beyond the bounds of London. In 1955 Metropolitan Police C.I.D. officers made 12,065 inquiries at the request of provincial forces and 392 on behalf of overseas forces.

Criminal Justice, see CRIMINAL LAW.

Criminal Law. The object of C. L. is the prevention of crimes by the threat of punishment. Crime has never been satisfactorily defined, but it may be said to have the following characteristics: '(a) it is a harm, brought about by human conduct, which the sovereign power in the State desires to prevent; (b) among the measures of prevention selected is the threat of punishment; (c) legal proceedings of a special kind are employed to decide whether the accused did in fact cause that harm, and is, according to law, to be held legally responsible for doing so' (C. S. Kenny, *Outlines of Criminal Law*). An act such as an assault or damage to property may be both a crime punishable as a wrong to the community and a tort giving rise to payment of damages to the individual whose private right has been violated. Some crimes, such as treason and perjury, do not form the subject matter of civil actions. Conduct although socially reprehensible or even immoral is not a crime unless recognised as such by statute or the common law. The courts have on rare occasions declared certain anti-social acts to constitute public mischief. The general principle of Eng. C. L. is that the courts will not abrogate legislative functions and will not impose punishment for any act unless it is specifically forbidden by law.

Classification of Crimes

In Eng. C. L. crimes are indictable (triable by a jury) or non-indictable (triable summarily by magistrates without a jury). Indictable offences include (i) treason, (ii) felonies (other than treasons), and (iii) misdemeanours. (i) Treasons are felonies aimed at the safety of the State (*see* TREASON); (ii) felonies (other than treason) are the more serious crimes such as murder, manslaughter, burglary, larceny, rape, and bigamy; (iii) misdemeanours are usually, but not necessarily, less heinous crimes such as perjury, conspiracy, false pretences, riot, and assault. The distinction between felonies and misdemeanours is less important than formerly. In feudal times a felony (the price of a fief) signified any offence for which the offender was liable to forfeit his fief or land to the lord of the fee. Later the term was extended to crimes punishable by forfeiture of goods. In the 18th cent. most felonies were capital offences. Acts which are felonies are either so described in statutes defining offences or are so by virtue of the common law. Felonies and misdemeanours differ mainly in their consequences: a suspected felon may, under certain conditions, be arrested without a warrant, but not so a misdemeanant; felonies must be tried on indictment (q.v.), whereas misdemeanours are triable on indictment or information; a person charged with a

misdemeanour may be released on bail (q.v.), but not so a person accused of a serious felony; a felon must be prosecuted before a person injured by the felony can sue for damages in the civil courts, but this does not apply to misdemeanours. Scottish C. L. does not distinguish between felonies and misdemeanours.

Crimes may also be classified according to their nature, i.e. offences against the public or state, offences against the person, offences affecting property.

(i) *Offences against the public* include these: (a) against the sovereign and gov., e.g. treason, sedition, and coinage offences; (b) against religion, e.g. blasphemy (q.v.); (c) against public justice, e.g. perjury, champerty (q.v.), maintenance (q.v.), breach of prison (*see* BREACH), and compounding (q.v.) offences; (d) against public peace, e.g. riots, libels, unlawful assembly; (e) against public trade, morals, health, and good order, e.g. smuggling, bigamy, indecency, incest, adulteration, and keeping gaming houses.

(ii) *Offences against the person* include murder, manslaughter, rape, wounding, assault.

(iii) *Offences against property* include larceny, burglary, embezzlement, obtaining by false pretences, receiving stolen goods.

Criminal Responsibility

The usual rule in Eng. C. L. is that no one is a criminal unless he has a guilty mind. Motive is irrelevant. Criminal intention, a guilty mind, and malice are synonymous in C. L., and indicate not ill-will against a particular person, but that a wrongful act has been done intentionally without just cause. Malice is an essential element unless an act is specifically or implicitly declared to be criminal without proof of guilty intention. For example the adulteration of food, even if accidental, can be an offence under the Food and Drugs Acts, and offences can be committed in connection with the sale of intoxicating liquors, without any guilty intent. In general, ignorance of the law is no excuse, although sometimes mistake of facts may be. A man cannot plead innocence on the ground that he was unaware that larceny is illegal. But he will not be guilty of larceny of an article if he can show that he honestly believed that he had a lawful claim to take it. A person is presumed to be responsible for criminal acts unless he is within one of the following categories:

(a) *Infancy.* Infants under 8 years of age are presumed to be absolutely incapable of crime. Children between 8 and 14 years of age are not criminally liable unless proved to have guilty knowledge.

(b) *Insanity.* An insane person is incapable of criminal responsibility. Sanity is presumed unless rebutted by proof that the accused at the time of committing the act was labouring under such a defect of reason, such disease of the mind, as not to know the nature and quality of the act he was doing, or, if he did know it, that he did not know that he

was doing wrong (*see* CRIMINOLOGY). Where the insanity is partial, i.e. where the delusions cover one or more matters only, the test of responsibility depends on whether, assuming the facts to be as the accused in his delusion supposed them, the act was nevertheless contrary to the law, and also whether the accused knew the act was contrary to the law.

(c) *Drunkenness* is no excuse for crime, although it may be relevant in considering the motive or intent with which the accused committed the act; and chronic drunkenness, causing a degree of madness temporary or permanent, may render the accused criminally irresponsible. The test of criminal responsibility in the case of drunkenness is not the same as for insanity, and where the defence sets up only drunkenness and not insanity, the judge will not direct the jury on the question whether, even if the prisoner knew what he was about, he knew that he was acting unlawfully. The House of Lords, confirming these principles in the case of *Rex v. Beard* in 1920, also held that evidence of drunkenness which makes the accused incapable of forming the specific intent essential as an ingredient in the crime with which he is charged should be considered with other facts proved so as to determine whether he had such intent.

(d) *Duress*. Persons committing acts otherwise criminal, under the threat of death or grievous bodily harm, are, in general, deemed irresponsible for such acts. This does not, however, apply to murder.

(e) *Marital coercion*. A woman, charged with a crime, other than treason or murder, shall have a good defence if she can prove that she committed it in the presence of and under the coercion of her husband.

Parties to a Crime

(a) *Principal in the first degree* is the actual offender in whose guilty mind lay the last blamable mental cause of the criminal act. Usually this is the person who commits the crime itself, but even if he does so through an innocent agent such as a 6-year-old child having no blamable intention, he is himself the principal in the first degree.

(b) *Principal in the second degree* is one who aids and abets the perpetrator of a felony at the time of its commission. For example, if 2 men are engaged in a robbery and one kills the person being robbed, the other is equally punishable as a principal in the second degree.

(c) *Accessory before the fact* is one who procures or counsels another to commit a felony. There can be no accessory to treason or misdemeanour, all participants being principals (*see* ACCESSORY).

(d) *Accessory after the fact* is one who, knowing that a felony has been committed by another, receives, relieves, comforts, or assists the felon (*see* BREACH).

Courts of Criminal Jurisdiction.

In England criminal cases are heard by the central criminal court (q.v.), assize courts, county or quarter sessions (*see*

COUNTY SESSIONS), and magistrates' courts. The queen's bench div. has a jurisdiction in all criminal cases, but rarely exercises it. Since the abolition in 1948 of peers' right to be tried on indictment by the House of Lords, that House is no longer in practice a court of first instance. Criminal appeals are heard by the court of criminal appeal and, in cases certified by the attorney-general as being of exceptional public importance, by the House of Lords. The divisional court of the queen's bench div. has an appellate jurisdiction on points of law on a case stated by quarter sessions or magistrates' courts. Quarter sessions can hear appeals on law or fact from decisions of magistrates' courts.

Punishment of Crime

Crimes, according to their gravity or the age of the offender, are punishable by hanging, imprisonment, Borstal (q.v.) or approved school training, or fines (q.v.). Until 21 Mar. 1957 the crimes of murder, high treason, piracy with violence, and setting fire to her majesty's ships and dockyards, etc. carried the penalty of hanging. For the present position, *see* CAPITAL PUNISHMENT. Imprisonment is imposed for a wide range of offences. The persistent offender can be sentenced to a term of corrective training or preventive detention. If a person not under 21 is convicted on indictment of an offence punishable with 2 or more years' imprisonment and has been twice previously convicted since he attained 17 years of age of offences similarly punishable, the court may, with a view to his reformation and the prevention of crime, in lieu of any other sentence, pass a sentence of corrective training of not less than 2 nor more than 4 years. This period of training is to be followed by a period of supervision if the offender is released before the expiration of his sentence. If the persistent offender is not less than 30 and has been convicted on indictment on at least 3 previous occasions since 17 years of age, and was on at least 2 of those occasions sentenced to Borstal training, imprisonment, or corrective training, the court may sentence him to a term of preventive detention of not less than 5 nor more than 14 years.

Children under 17 may be sent to an approved school (*see also* below). Persons convicted of an indictable offence punishable with imprisonment, who are 16 but under 21 on the day of conviction, may be sentenced to a period of Borstal training.

No court may impose a sentence of whipping. But under the Criminal Justice Act, 1948, a male prisoner may be ordered by a visiting committee to receive 18 strokes (12, if he is under 21) of a cat-o'-nine-tails or birch rod for mutiny, incitement to mutiny, or gross personal violence to a prison officer.

The Crown, through the home secretary, may exercise the prerogative of pardon, or reprieve a person convicted of murder by commuting the death sentence to a term of imprisonment.

Criminal Justice Act, 1948, embodied considerable penal reforms and procedural changes in the C. L. It abolished sentences of penal servitude, hard labour, and whipping (except as above). It amends the law relating to the probation of offenders, provides new methods for dealing with persons liable to imprisonment, and modifies the treatment of young criminals.

(a) *Procedural changes.* Privilege of peerage in criminal proceedings is abolished. The right of peremptory challenge of jurors is abolished, but an accused person is protected by his right to challenge a juror 'on cause shown.' Certain powers of arrest without a warrant conferred by the Vagrancy Act, 1824, have been restricted.

(b) *Probation.* For an offence for which sentence is not fixed by law, the court may, instead of imposing a term of imprisonment, having regard to the character of the offender and the nature of his offence, place him under the supervision of a probation officer for a period of not less than 1 and not more than 3 years. In order that the offender may not be influenced by undesirable associates, a probation order may require him to reside in an approved hostel or home. An offender who, although not certifiable as being of unsound mind or mentally defective, is, in the opinion of the court, in need of and likely to respond to mental treatment, may be required under a probation order to submit to such treatment as a voluntary patient. A probationer will not be deemed to have failed to comply with such a requirement merely because he has refused to undergo any surgical, electrical, or other treatment, if the court considers that his refusal was reasonable. An offender who disobeys a probation order may be dealt with by the court in any manner in which it could have dealt with him if it had just convicted him of his original offence. A young offender may be required to attend an 'attendance centre' for a specific number of hours.

(c) *Young offenders.* A young person who, at the time when he committed a capital offence, appeared to a court to have been under the age of 18, may not be sentenced to death but shall be ordered to be detained during her majesty's pleasure. A court of summary jurisdiction may not impose imprisonment on a person under 17 years of age, and a court of assize or quarter sessions may not impose imprisonment on a person under 15 years of age; a person under 21 shall only be sentenced to imprisonment if the court is satisfied that there is no other appropriate method of dealing with him. The alternatives to imprisonment are probation orders, detention in a detention centre, and training at a Borstal institution, but a court may not order a person to be detained at a detention centre if he has previously been sentenced to imprisonment or Borstal training, or if he is not less than 17 years of age and has previously been ordered to be so detained since reaching that age. A court of sum-

mary jurisdiction inflicting imprisonment on a person between 17 and 21 must record its reason for its opinion that no other method of dealing with the offender is appropriate. The Act contemplates that a young offender discharged from prison shall be under adequate supervision to assist his rehabilitation and to deflect him from crime. The Act, therefore, provides that offenders under 21, sentenced to 12 months' imprisonment or more, shall, in approved cases, be licensed at the time when ordinarily due for discharge as remission for good conduct. The licence provides for the supervision of the offender, who for the remainder of the period is liable to recall. Some important changes in Borstal training are made by the Act. The age limit is fixed at 21 and qualification for Borstal training has been widened so that a court is empowered to order it, if satisfied of its efficacy, having regard to the circumstances of the offence and the character and previous conduct of the offender. The actual period of detention in a Borstal institution may not exceed 3 years or be less than 12 months. See APPROVED SCHOOLS, REFORMATORIES AND INDUSTRIAL SCHOOLS; BORSTAL TRAINING; CHILDREN AND YOUNG PERSONS, WELFARE OF.

Scots Law.—Scottish C. L. in its essentials closely resembles the Eng. but differs in its terminology, which is borrowed from civil law (q.v.), although often applied with a different shade of meaning, e.g. criminal intent or malice is known as *dole* (Lat. *dolus*, fraud, deceit); and small petty offences are generally called *delicts*. By Scots law no private party except the person injured or his next of kin can accuse criminality; and in order to do so he must obtain the Lord Advocate's consent to the prosecution with a right of appeal to the High Court of Justiciary should such consent be refused.

See J. F. Stephen, *Digest of Criminal Law*, 1877, 1926, and *History of the Criminal Law of England*, 1883; S. F. Harris, *The Principles and Practice of the Criminal Law*, 1899, 1936; P. Howard, *Criminal Justice in England*, 1931; A. M. Wilshire, *Elements of Criminal Law and Procedure*, 1935; H. Mannheim, *The Dilemma of Penal Reform*, 1939; C. S. Kenny, *Outlines of Criminal Law*, 16th ed. by J. W. C. Turner, 1952.

United States.—The principles underlying the C. L. of the U.S.A. are those of the Eng. common law. Most of the maxims familiar to the student of Eng. C. L. obtain in the Amer. system, e.g. the maxim, *neminem ignoranta eorum quae quis scire tenetur excusat*, i.e. every person is bound and is presumed to know the law at his peril. The C. L., whether common or statute, is imperative with reference to the conduct of individuals; so that where a statute forbids or commands anything to be done, any act of omission or commission contrary to the prohibition or command is an offence at common law and indictable in the U.S.A. as in England. An offence which may be the subject of criminal procedure is

defined in the classic Amer. authorities as an act committed or omitted in violation of a public law either forbidding or commanding it (144 U.S. 677). As respects the sources of Amer. C. L., it is an accepted principle that when a statute punishes a crime by its legal designation, without enumerating the acts which constitute it, then it is necessary to resort to the common law for a definition of the crime with its distinctions and qualifications; hence if an act is made criminal, but no mode of prosecution is directed or no punishment provided, the common law comes into operation, prescribing the mode by prosecution or by indictment. This is the common law of England, but might now be properly called the common law of the U.S.A. (Baldwin's *Century Edition of Bouvier's Law Dictionary*, 1926). Many if not all the cardinal principles of the Eng. and Amer. systems of C. L. are identical, e.g. that every one is presumed to be innocent till the contrary is shown; that the question of guilt is to be determined without reference to a prisoner's general character; that the prisoner cannot be required to criminate himself; but this principle is subject to the position that where the prisoner testifies in his own behalf he may be cross-examined like any other witness, just as in Eng. criminal procedure under the Criminal Evidence Act, 1898. Though the states owe their law to the one common source, the common law of England, it cannot be said that one *corpus juris* of C. L. prevails in the U.S.A. as a whole; for in the administration of the C. L. each state has its exclusive jurisdiction as a sovereign independent community; each with its own judges and its own separate procedure, subject always to the overriding restrictions imposed by the Amer. Constitution. As in England, the div. into felonies and misdemeanours prevails, but by the operation of statute law it occasionally happens that a crime may be a felony in one state and a misdemeanour in another; but generally the more serious crimes are felonies. In state codes or systems of C. L. crimes are further divided into the usual categories of crimes against the person and against property, other main categories being crimes against the public peace (e.g. riots), against trade (e.g. offences against the customs laws), against decency, against the law of nations (e.g. piracy). There are various 'degrees' of culpable homicide (see MURDER); while as regards treason, the sole kinds recognised in the U.S.A. are levying war against the State or adhering to its enemies. As to the ingredients of any particular crime, the general principles are the same in the U.S.A. and for the different states as in other matured legal systems; and the same observation applies to the analysis of criminal responsibility, e.g. the rule in *McNaughten's case* on insanity as a defence (see MCNAUGHTEN CASE), and again as to the validity or otherwise of drunkenness as a defence. In one vital particular criminal procedure in the U.S.A. is in advance of Eng. procedure, in that in a prosecution for a crime in which

there is no question of vindicating the public wrong proceedings are initiated by a state official, variously styled the State attorney or dist. attorney, who takes the place of the private prosecutor in England. The summary jurisdiction in the U.S.A. follows much the same course as in England, and similar stages of procedure. Again, as in England, there are juvenile courts for the trial or correction of young children or young persons. As regards appeal the accused can, in all the states, petition the trial court for a new trial, which, however, will be granted only if the court thinks the conviction cannot stand in law. Generally, too, the accused may appeal to a court of higher instance both on a question of law and on a question of fact; but there is this cardinal difference from the practice that prevails in the Eng. court of criminal appeal, that the Amer. court cannot hear new evidence nor vary the sentence, but is restricted to either quashing the conviction or remitting the case for re-trial.

Criminal Responsibility, see CRIMINAL LAW.

Criminology. C., the study of the causes and nature of crime, must start with a consideration of what is meant by crime. There is a widespread tendency to equate crime and sin, but there are many offences against the law that are not regarded as sins by the accepted moral codes of the day and many sins which are not criminal since they are not forbidden by law. In electing to prohibit certain actions, the State cannot ignore the ethical standards of the day, but the determining factors are primarily concerned with the harm the community may suffer through a particular action, rather than with moral issues, taking into account also whether the offence can be detected in a sufficient number of cases for the law to be workable.

C. may be regarded as having its genesis in the work of Lombroso, the founder of the Anthropological School of C., who pub. his *L'Uomo Delinquente* in 1876. Lombroso regarded criminality as an inborn characteristic, associated with certain physical signs of degeneracy: e.g. a receding forehead, small cranium, and projecting ears. In later eds. he did admit the possible influence of environment, but his work is still associated with his original conception of the criminal born.

There were many critics of his work, notably Dr Goring of the Eng. prison medical service, who showed that Lombroso's so-called stigmata of degeneracy were found with equal frequency amongst non-criminal persons. It is now recognised that no convincing study of criminals is possible without a study of non-criminals as control groups.

Although Lombroso's views are no longer accepted, his influence was very great, as he was the first person to break away from a purely moral attitude to crime and to attempt to discover its causes by scientific investigation. His idea that there is a connection between physique and criminality has been supported by certain aspects of modern research, though in very different forms.

S. and E. Glueck, the leading Amer. criminologists, have shown that a certain stocky physical type is more common amongst delinquents than amongst non-criminal youth. But this is recognised as only one factor amongst many and certainly not indicating a 'born criminal.'

Other modern investigators who are interested in the physical make-up of criminals have stressed the influence of the endocrine glands. Others have applied the electro-encephalograph (the E.E.G.) which measures the electrical activity of the brain. Applied first to epileptics, it was found that their E.E.G.s showed abnormal rhythms with much greater frequency than was the case in the normal control group. This is also true of the aggressive psychopath and to a lesser degree of the passive psychopath. A study of a group of delinquent boys admitted to an approved school showed a high proportion with an abnormally slow rhythm of a type which has been found to be connected with the immature personality.

At the other end of the scale are the criminologists who ignore personal characteristics and hold that all crime is a reaction to economic circumstances. Statistics show an undeniable close connection between crime and poverty; e.g. crime increases in times of unemployment and falling standards of living, as during the depression of the '30s. One school of criminologists concentrating on ecological studies have found that crime is most common in the central industrial dists. of a tn where housing conditions are poor, but their conclusions are now seen to be not so universally applicable as they held. Recent investigations (Mannheim in Cambridge and Bagot in Liverpool, for example) have shown that the worst criminal areas may be the new housing estates, not the central slums. Clearly sociological and personal factors must be relevant as well as material conditions.

The extreme Marxian view that thinks in terms only of economic conditions makes no attempt to explain why, given a certain environment, some persons become delinquent and others do not. It also assumes without question that because crime and poverty frequently go together the latter must be the cause of the former. But the connection need not be a causal one. Both criminality and poverty may be due to the same weaknesses of character in the individual.

The modern criminologist, like Lombroso, has again turned to the study of the individual. *The Individual Delinquent* by the Amer. criminologist, W. Healy, 1915, set the pattern of a new approach. But, unlike Lombroso, the modern criminologist is not concerned solely with physical characteristics. These may be important in some cases, but they account for only a part of the whole personal make-up. Psychological factors have also to be taken into account, and the reactions of the individual to his family and to his educational and social background.

It was inevitable that the teaching of Freud, Jung, and Adler should pro-

foundly affect the study of criminal behaviour. The stress placed by the modern psychologist on the child's earliest years and his relationship to his family as determining his later attitudes to society has a deep significance for the criminologist, since the development of a social conscience is built up in the first instance by the child's desire to please the mother, whilst his later attitude to authority may be a reflection of his attitude to his father (see CHILD STUDY). Modern psychological research has also shown that the power to feel affection cannot develop normally unless in the early years affection is received from the mother (or some substitute for her). Dr Bowlby and other psychologists have found that prolonged separation from the parents at an early age may render a child unable to form emotional relationships. The result may be the affectionless criminal, whom it is almost impossible to influence since there is no emotional line of approach.

The Amer. criminologists Healey and Bronner, who compared the hist. of a large number of delinquent children with the hist. of a non-delinquent brother or sister, found that nearly all the delinquents were very unhappy in their life circumstances, owing to a lack of affection, jealousy or disharmony in the home, or to a sense of inadequacy and failure, or to other emotional and deep-seated trouble. There were at most only 13 per cent of the non-delinquents who had had the same experiences, and in every instance they had been able to find counterbalancing satisfactions, whereas the delinquents had no legitimate alternatives.

The sense of failure referred to in the last paragraph is of significance in relation to the question of the intelligence of criminals. It has for long been generally accepted that the average intelligence of the criminal was below that of the general population. The latest research suggests that this difference has been much over-estimated, if it exists at all. It is, however, certain that young offenders are generally backward in the sense that they are not up to the standard which one would expect in view of their age and natural intelligence. Their backwardness may produce that sense of failure which turns them to crime as a compensation. But the causal connection may not be so clear cut as this. The offender's backwardness may be accounted for by certain qualities that also tend to produce delinquency—inability to stick to a job as evinced here by truancy, lack of application, and an unwillingness to accept authority. Probably the two sets of causes react on each other.

This difficulty in disentangling cause and effect is something that is frequently found in the study of criminals. The pattern formed by the offender's characteristics, physical, mental, and emotional, and his reactions to his personal and social environment, is infinitely complicated and there is room for many cross currents. Modern research has shed much light on the different aspects of

criminal behaviour, but it has also shown that there is never just one cause and that the picture is much more complicated than earlier criminologists had realised.

The modern emphasis on the emotional and mental factors in the causation of crime has produced a school of thought which, like the Marxian, tends to regard the criminal as made by circumstances, though it stresses a wholly different set of circumstances. In this view the criminal is someone in need of psychiatric treatment rather than punishment. That such treatment has a role to play is now widely realised, but the more responsible psychiatric thought recognises its limitations. Nevertheless modern psychological work has made it clear that persons do exist who without being certifiably insane or insane in the sense laid down by the McNaughten Rules (see McNAUGHTEN CASE) are none the less not fully responsible for their actions, though the doctrine of lessened responsibility has not yet been recognised by Eng. law. See C. Hurt, *The Young Delinquent*, 1925; W. Healy and A. Bronner, *A New Light on Delinquency*, 1935; J. Bowlby, *Fourty-Four Juvenile Thieves*, 1946; S. and E. Glueck, *Unraveling Juvenile Delinquency*, 1950; S. Hurwitz, *Criminology*, 1952; H. Jones, *Crime and the Penal System*, 1956; W. A. Elkin, *English Penal System*, 1957.

Crimmitschau, see KRIMMITSCHAU.

Crimp, one who deceived men into the naval or military (but especially naval) service. Apparently the usual method employed was to ply a man with drink and then induce him to sign articles of service. Section 111 of the Merchant Shipping Act, 1894, provides that only a person who holds a licence from the Board of Trade, or who is the owner or master or mate of a ship, or is the servant and in the constant employment of the owner of a ship, or is a superintendent, may engage a seaman to be entered on board any ship in the U.K. There is a further provision that no one may receive any seaman to be so entered if he knows that the seaman has been engaged in contravention of the Act. The penalty is a fine not exceeding £5 for each offence.

Crinan Canal, Argyll, Scotland, connecting C. Loch on the Sound of Jura with Loch Fyne at Ardrishaig. It is about 9 m. long and 24 ft broad, and was completed in 1801.

Crinkle, in horticulture, a term indicating virus diseases which cause puckering of plant leaves, as in strawberry C.

Crinoidea (Gk *krinon*, lily; *eidos*, form), beautiful class of echinoderms containing about 800 living species and more than 2000 fossil forms; the extinct crinoids are usually spoken of as stone-lilies, and the existing species as sea-lilies. In general structure they resemble other echinoderms, such as the starfishes, but they have many features peculiar to themselves. Some of the best-known species are *Antedon rosacea*, the feather-star, *Rhizocrinus lofotensis*, which occurs at great depths of the Atlantic, and *Pentacrinus asterius*, which is found in the Pacific.

Crinoline (Lat. *crinis*, hair, *linum*, flax, linen), name given to a stiff horsehair fabric formerly used to distend women's skirts. A wired structure worn beneath the gown to widen the garment at the hem was also called a C. The name too, is often applied alike to the Elizabethan



CRINOLINE (c. 1855)

farthingale (q.v.), the later hooped petticoat used in the 18th cent., and to the 19th-cent. bustle with a petticoat 4 or more yds wide at the hem. The hoop was first made of wood, then of whalebone or steel. A fabric made of horsehair known as C. has, at various times, been used for millinery.

Crinum, genus of Amaryllidaceae, contains nearly 100 handsome plants, many of which form the greatest ornaments of our gardens. They are naturally tropical and subtropical, but they will grow well in England. *C. asiaticum*, the poison bulb, is a native of the E. Indies; its bulbs are powerfully emetic and are used in Hindustan to produce vomiting when poison has been taken. *C. amabile* is another beautiful native of the E. Indies.

Cripples. Where crippling has not been caused by accident or as an effect of war, it usually has its origin in poliomyelitis or infantile paralysis, in tuberculosis, or in some congenital disease.

In 1890 Mrs Humphry Ward made provision for C. in her settlement in Tavistock Place, London, being a pioneer in this matter. Good work was later performed by Mrs Grace Kimmins, wife of a late chief inspector of the L.C.C. Education Dept. As founder of the Heritage Schools of Arts and Crafts for Crippled Boys and Girls, 1901, at Chailley, Sussex, she trained thousands of children from 3 to 16 years of age to become self-reliant citizens, in many cases able to earn their own livelihood by such work as cabinet-making, tailoring, shoemaking, or embroidery. This institution was taken over by the State in 1948 as part of the

National Health Service. In 1908 the Lord Mayor Treloar Cripples' Hospital and College was founded by Sir Wm Treloar at Alton and Hayling Is., to afford curative treatment for children up to 12 years of age suffering from tuberculous diseases of bone or joints, and technical education for boys from 14 to 18 years of age. This also became part of the National Health Service in 1948. The C. home and industrial school at Winchmore Hill trains girls over 8 years of age in dressmaking, while the Fine Needlework Association for Invalid Women and Girls, in Kensington, London, employs embroidresses and needleworkers above the age of 15 years. The Stratford-on-Avon weaving school provides a means of whole or partial support for crippled girls. In 1920 a bureau of information, the Central Council for the Care of C., was estab. In Great Britain, the Invalid Children's Aid Association and the Central Council for the Care of C. have had considerable influence on progress in local welfare. Educational and propaganda work is done by both societies to inspire practical efforts in solving problems relating to persons handicapped by physical defects. To mention these works on behalf of C. is but to indicate in outline the growing volume of effort, both voluntary and by public authorities, in aid of these sufferers since the beginning of the cent. Since 1948 the care of C. has almost entirely become the responsibility of the State through the agency of the National Health Service and its many orthopaedic hospitals, and of the education authority and its school medical service. See J. Colson, *The Rehabilitation of the Injured*, 1944.

Cripps, Sir Stafford (1889-1952), politician and lawyer, son of Sir Alfred C., first Baron Parmoor, whom he followed into the ranks of Labour politicians; educ. at Winchester and Univ. College, London. He became a lawyer, and was called to the Bar, 1913; K.C., 1927. He became a Fellow of Univ. College, 1930. C.'s legal practice became one of the most lucrative in the country. He was solicitor-general in the second Labour Gov., 1930-1, and was elected Labour M.P. for W. Bristol, 1931. He went into opposition on the formation of the National Gov. and resigned from the Labour party's executive when the party supported economic sanctions against Italy. Recalled to the party's executive, he advocated a united front with the Communists, but this was rejected by the party conference of 1937. Later he began a campaign for a popular front composed of Socialists, Liberals, Communists, and Independent Conservatives, and was expelled from the Labour party, 1939; but on coming up the campaign he was readmitted. In June 1940 he was appointed Brit. ambas. to Moscow, staying in Moscow until 1942. In the same year he became Lord Privy Seal, leader of the House of Commons, and a member of the War Cabinet. In 1942 he went to India to try, unsuccessfully, to persuade the Indian leaders to agree to Britain's terms for future Indian self-gov.

He went on another political mission to India in 1946. From 1942 to 1946 he was Minister of Aircraft Production; and in the Labour Gov. which took office in that year C. was successively President of the Board of Trade, Minister for Economic Affairs, and Chancellor of the Exchequer. He held this last post from 1947 to 1950, and his rigid policy of export priorities, and stringent anti-inflationary measures, involving heavy taxation, became known as the 'austerity' policy. Ill-health forced his resignation in Oct. 1950, and he d. some 18 months later. His sincerity and ability won him the respect of his most bitter opponents. C. was all his life a convinced high churchman. See life by C. Cooke, 1957.

Crisa, see **CRISSA**.

Crisana, a dist. formerly of E. Hungary awarded to Rumania in 1920 with Maramureş (Hungarian *Máramaros*), the dist. to the N. of C. Both were returned to Hungary by the Vienna award, 1940, but confirmed as Rumanian by the peace treaties of 1947. C., area 8400 sq. m.; pop. 1,500,000; Maramureş, area 1350 sq. m.; pop. 150,000.

Crispi, Francesco (1819-1901), It. statesman, b. Ribera in Sicily. He was an advocate at Naples when the Palermo revolt broke out in 1848. Taking a leading part in this, he had to escape to Piedmont, where he earned a scanty living as a journalist. Expelled in 1853 as a republican conspirator, he fled to France, was again expelled, and joined Mazzini in London. In 1859 he returned to Sicily to foment rebellion against the Neapolitan Gov., and in 1860 helped Garibaldi in the expedition which swept the Bourbons out of S. Italy. He was appointed to important posts, first in Sicily and afterwards in Naples, but in 1864, recognising that only the monarchy could unify Italy, he became a supporter of Victor Emmanuel, remaining all his life anti-Fr. and anti-clerical. In 1867, when Garibaldi attacked the papal states, C., foreseeing that the movement would certainly fail and injure the national cause, tried to check his former leader, but without success; the catastrophe came, and led to the retention of a Fr. garrison at Civita Vecchia. During the Franco-Prussian war, however, this was withdrawn, and C. and his followers practically forced the It. Gov. to occupy Rome. When the Liberals came into power, 1876, C. became president of the Chamber, and in 1877 went on an important political mission to London, Paris, and Berlin, holding negotiations which prepared the way for the formal estab. of the new kingdom in 1878, when on the death of Victor Emmanuel of Savoy his son was crowned as Umberto I of Italy. In 1878 he joined the Depretis ministry, but had to retire when charges of personal misconduct (later proved false) were brought against him. In 1887 he succeeded Depretis as premier, warmly promoting the views of the Triple Alliance, and treating France with decided coldness. His party was overthrown in 1891, but in 1894 he was again premier. In 1898 the

disaster of Adowa, where an It. army was annihilated by the Abyssinians, ruined his gov., and he never resumed office. See G. Salvemini, *La Politica Estera di Francesco Crispi*, 1919; and B. Croce, *Storia d'Italia*, 1871-1915, 1928.

Crispin, Saint (d. c. 287). With his brother Crispinian he is said to have left Rome for Gaul, and to have carried on the trade of a shoemaker, thus becoming the patron saint of shoemakers. The two brothers were martyred at Soissons; their feast is on 25 Oct. Cf. Shakespeare's *Henry V*, iv, 2.

Crissa, or **Crisa**, tn of anct Greece in Phocis, was situated SW. of Delphi near Mt Parnassus, remains of its old walls still being in existence. Some people have identified it with Cirrha, but the general opinion is that Cirrha was the port, although the two were intimately connected in anct hist. Owing to large tolls having been levied on pilgrims visiting the oracle, war was declared by the Amphictyons at the beginning of the 6th cent., and both tns were destroyed. Cirrha was afterwards rebuilt and became the port of Delphi.

Cristofori, **Bartolommeo** (1655-1731), b. Padua. He was a maker of harpsichords, and, after carrying on his business in Padua for some time, was eventually asked by Ferdinando de' Medici to go to Florence, where he remained until his death. He was the first one to employ 'hammers' in the mechanism of his instruments and thus became the inventor of the pianoforte.

Critchett, **Richard Claude**, see **CANTON**.

Criterion Theatre, London, opened in 1874, was originally joined to Spiers & Pond's Hotel, being built underground. In 1875 Charles Wyndham obtained a share in the management of the theatre and in 1884 it was re-opened under Wyndham's management after having been reconstructed. *Brighton and The Candidate* both proving successes. In 1886 Wyndham appeared with Mary Moore in *David Garrick*, one of his greatest successes. Henry Arthur Jones's *The Case of Rebellious Susan*, 1894, and *The Liars*, 1897, were performed here. Long runs include *A Little Bit of Fluff*, 1915, with 1241 performances; *French without Tears*, 1936, with 1039 performances; and *Traveller's Joy*, 1948, with 954 performances. Recent productions there include *Waiting for Godot*, 1955, and *The Walts of the Toreadors*, 1956.

Critias, pupil of Socrates, who ceased to follow his doctrines, at any rate after he had passed from the sphere of Socrates's personal influence. In Athens he led the oligarchical party, and in 404 Bc he was one of the appointed Thirty Tyrants, practising in that capacity many excesses and cruelties. In the same year he fell in the battle of Munychia, fighting against Thrasybulus. He was also a writer of poetry, and is said to have written a work on politics.

Critical Temperature, that temp. below which it is possible to liquefy a gas by applying pressure. Air must be cooled below -140° C. at a pressure of 39

atmospheres, and hydrogen below -241° C. under 15 atmospheres, before they can be liquefied. All gases have now been liquefied, the most difficult to liquefy being helium. See **GAS AND GASES**, *Liquefaction of Gases*.

Criticism, **Biblical**. A certain study of the sacred text has always existed, but the growth of biblical studies in the 19th cent. has led to a classification into 2 separate depts, which have been named (1) Lower or textual C., and (2) Higher C.

(1) The variations found in the early scriptural texts show that the first people who made an effort to prepare an ed. of the O.T. and N.T. practised this art in some degree. In the last cent., however, such great strides have been made in this subject that the term is generally reserved to the work of this period. The autographs of the scriptures are no longer extant, and in the various copies that remain there are many differences of text. These differences have arisen in various ways, some from the errors of copyists, some from the interpolation of glosses or marginal comments into the text. It is the work of the textual critic to collate all the texts at his disposal and all parallel documents which may throw light on the subject. From these he attempts to find out the original autograph readings. The field for the N.T. C. is widened by the great number of MSS. that have come down to us (see **BIBLE**). The most useful text of the N.T. is E. Nestle's *Novum Testamentum Graece et Latine*, 1906. The groundwork for this ed. had been laid by Westcott and Hort's excellent *New Testament in the Original Greek*, 1881, and the text of Tischendorf.

(2) Higher C., on the other hand, does not try to establish the text, but examines minutely internal evidence in order to reach conclusions as to the date, authorship, and nature of the book, studying also external evidence in order to place the book in its historical setting. The higher critic must discuss the books of the Bible literally, historically, and theologically. Of primary importance is the dating of the various writings, and the question of their authorship. Higher C. was first applied to the O.T. by Jean Astruc, a Fr. physician, whose work, entitled *Conjectures sur les mémoires originaux dont il paroît que Moïse s'est servi pour composer le livre de la Genèse*, was pub. in 1753 with some doubt by this devout Catholic lest it should become an instrument in the hands of the free-thinkers. In this work he points out the distinction between the two sources (Jahvistic and Elohist) of the book of Genesis, and his position has been supported and extended by modern critics. The next important name in O.T. C. is that of Eichhorn, who applied Astruc's system of examination to the rest of the Pentateuch. The introduction of these methods of historical study into the realms of sacred thought was viewed with horror by the ultra-orthodox, and vigorous attempts were made to stop it. In N.T. C. the extreme radical views of certain Ger. and Dutch scholars have now been

generally rejected, and although there is no sign of a general return among Protestants to the traditional idea of the verbal infallibility of the N.T. writers, the general historical accuracy of the synoptic gospels (i.e. Matthew, Mark, and Luke) is reaffirmed by the majority of competent critics. The historical character of the fourth gospel is still in dispute. The authenticity of the Pauline Epistles is accepted, with reservations in the case of Ephesians and the Pastoral Epistles.

In consequence of new material that has come to hand in the last cent., our knowledge of the N.T. has become more accurate and scientific, and we have passed to a new stage in C. Whereas in the 19th cent. (and down to 1914) N.T. scholarship had concerned itself largely with critical analysis of documents, and through such analyses with problems of authorship, date, principles of composition, sources, derivations, and the like, these questions no longer stand at the centre of interest. The tendency now is to examine further questions in the light of what the different schools of thought consider proved. The new C. is less analytical than synthetic. The true use of the Higher C. has been finely summed up by Strachan in his article 'Criticism' (O.T.) in the *Encyclopaedia of Religion and Ethics*. 'Since all light and truth are of God,' he says, 'biblical science can bring the churches and nations nothing but good. It is inevitable that the art of criticism should sometimes be practised by men of little faith, or of no faith, and that in their case the critical spirit should be captious rather than sympathetic, the critical weapon destructive rather than constructive. The fault is not in the instrument but in the user.'

Higher C. developed later in England than on the Continent, and on the whole has followed conservative lines, as may be seen from the above quotation. Among the moderate critics may be cited J. B. Lightfoot, W. H. Sanday, and R. F. Westcott. Cheyne and Black, of the *Encyclica Biblica*, are more radical. See Anderson, *The Bible and Modern Criticism*, 1893; Höpfl, *Die Höhere Bibelkritik* (2nd ed.), 1905; Vigouroux, *Les Livres Saints et la Critique Rationaliste*, 1886; C. Gore, *A New Commentary on Holy Scripture*, 1928; B. Orchard and others, *A Catholic Commentary on Holy Scripture*, 1953. See also T. K. Cheyne, *Founders of Old Testament Criticism*, 1893; J. Wellhausen, *Prolegomena zur Geschichte Israels*, 1899; G. A. Smith, *Modern Criticism and the Preaching of the Old Testament*, 1901; A. Robinson, *The Study of the Gospels*, 1902; B. H. Streeter, *The Four Gospels*, 1924. For separate books of the Bible see the vols. of the *International Critical Commentary*, Westminster Commentaries, and Clarendon Bible, especially works by Rawlinson, MacNeil, Barnard, and Balmforth.

Criticism, Literary, see LITERARY CRITICISM.

Critolaus (2nd cent. BC), Gk philosopher and rhetorician, b. Phaselis in Lycia. He succeeded Ariston of Ceos as head of the

Peripatetic school. In 155 BC he accompanied Carneades (q.v.) and Diogenes the Babylonian on an embassy from Athens to Rome.

Crittenden, John Jordan (1787-1863), Amer. politician, b. Versailles, Kentucky. He was a senator, 1835-41. In 1841 he became attorney-general in the Cabinet of President W. H. Harrison. From 1848 to 1850 he served as governor of his state. In 1850 he served in the Cabinet of President Fillmore as attorney-general, and from 1855 to 1861 again in the Senate. In the Civil war his influence was marked in keeping Kentucky from seceding from the Union. In 1861 he was elected to the National House of Representatives, where he stoutly upheld the gov. in its war-making policies, but bitterly opposed dividing Virginia into two states and the enrolment of Negro slaves as soldiers. He d. at Frankfort, Kentucky.

Crivelli, Carlo (active 1457-93), It. painter, who seems to have been the pupil of Antonio Murano. B. Venice, he lived and worked at Ascoli. The National Gallery has the best collection of his work and notably the 'Annunciation,' sumptuous in detail. See F. Drey, *Carlo Crivelli*, 1927.

Crnagora, see MONTENEGRO.

Croagh Patrick, 2510 ft. Ireland's holy mt, rising above Clew Bay, co. Mayo. Each year on the last Sunday in July a national pilgrimage is held, in which thousands, some barefooted, climb the mt to attend the series of Masses celebrated in the oratory at the summit.

Croatia (Serbo-Croatian *Hrvatska*; Hungarian *Hörvátország*): 1. Anct dist. of Europe in the N. of the Balkan Peninsula (q.v.), extending from the Adriatic to the R. Sava (q.v.). For long it formed with Slavonia (q.v.) the prov. of C.-Slavonia, and it is now part of the republic of C. Yugoslavia (see 2, below). The prin. tn is Zagreb (q.v.).

2. Constituent republic of Yugoslavia, consisting of the old dist. of C. (see 1, above), Slavonia (q.v.), and part of Dalmatia (q.v.). It extends from the Adriatic to the R. Drava, and encloses Bosnia-Herzegovina on three sides.

The Croats (*Chrvatsi*, mountaineers), a Slav tribe (see SLAVS), overcame the Avars (q.v.) in Pannonia (q.v.) in the 7th cent., and soon held most of Slavonia, the old dist. of C., NW. Bosnia, and Dalmatia. In the 9th cent. they adopted Latin Christianity, and c. 900 a kingdom was estab. and proclaimed independent of the Byzantine emperor. This kingdom lasted for nearly 2 cents. From the close of the 11th cent. to the middle of the 15th cent. the hist. of the region was closely linked with that of Hungary. It then came largely under Turkish domination until the beginning of the 18th cent. In 1809-13 part of the region was in Napoleon's Illyria (q.v.), and in 1848 the region was declared independent of Hungary, and the governors (see BAN) received their instructions from Vienna; at this time Jellachich (q.v.) was *ban* of (the old dist. of) C. In 1881 the joint Austrian crown-land of C.-Slavonia was formed. After

the collapse of the Austrian empire during the First World War, the region became part of the newly-formed kingdom of the Serbs, Croats, and Slovenes—later Yugoslavia. There was, however, Croatian opposition to the centralist gov., and there were attempts to make C. Slavonia autonomous. The Croat leader, Stjepan Radić, was assassinated in 1928, and in the following year King Alexander (q.v.) abrogated the constitution and united the country under a royal dictatorship (see YUGOSLAVIA, *History*). In 1941 the Gers., after their occupation of Yugoslavia, set up a puppet state of C. despite the protests of the Yugoslav gov., and C. was recognised as an independent country by



Yugoslav Embassy

WEAVING AT HRASTOVICE, CROATIA

The woman wears the traditional dress of her village.

all the Axis states. There were, however, Croats in the partisan forces of Marshal Tito (q.v.). At the end of the war, the People's Republic of C. was set up as part of the federal republic of Yugoslavia.

C. is very mountainous, and contains wooded offshoots of the Julian and Styrian Alps (2000–4000 ft). It has part of the Karst (q.v.), and other mountainous dists. are the Zagreb highlands, and the coastal region of the Great and Little Kapela and the Velebit Planina (c. 3700 ft). There are also alluvial and diluvial plains, fertile valleys and forests of oak, beech, elm, and pine. The lower parts of Slavonia are marshy. Off the coast there are numerous large is., of which the prin. are Krk, Cres, Rab, Pag,

Brač, Hvar, and Korčula (qq.v.). The climate is, in general, moderate, and Mediterranean on the coast. The N. coast-lands, however, suffer from the *Bura*, a cold wind coming from the Karst. C. is predominantly agric. Cereals, potatoes, hemp, tobacco, and fruit are grown, and horses, sheep, swine, and other livestock are reared. Some wine is produced, and the plum-brandy 'šljivovitz' is well-known. Coal, iron, zinc, lead, and copper are mined, though not in large quantities, and there are textile, glass, and metallurgical industries. The inhabs. are mainly Rom. Catholic. The prin. tns are Zagreb (the cap.), Rijeka, Osijek, Split, Karlovac, and Pula (qq.v.). Area 21,730 sq. m. Pop. 3,913,800. See R. W. Seton-Watson, *Absolutism in Croatia*, 1912; C. Battorich, *The Martyrdom of Croatia*, 1920; J. Buchan (ed.), *Yugoslavia*, 1923; G. Ellison, *Yugoslavia, Country and People*, 1933.

Croce, Benedetto (1866–1952), It. philosopher and critic, b. at Pescasseroli, Aquila. Began education at Catholic boarding-school in Naples. In 1883, by the earthquake of Casamicciola in the is. of Ischia, C. lost his parents and only sister, and was buried for hours under ruins and severely injured. Afterwards he lived at Rome with his uncle Silvo Spaventa, a Conservative leader. Returning to Naples in 1886, he became known as a local antiquarian. His philosophical disquisitions arose out of his historical studies and began in 1893. He also devoted attention to the economic doctrines of Marx. According to C. the Absolute is found to be a beginningless and endless Activity; reality is exhausted by the four pure concepts—Beauty, Truth, Usefulness, and Goodness. C. was made a senator in 1910, and minister of education from June 1920 till July 1922. Unlike Giovanni Gentile (q.v.), C. not only refused to co-operate with the Fascists but was active with his pen against their anti-liberal forces. But his repute and standing were so high that even Mussolini did not take drastic measures against him. It is remarkable that C.'s book *History as the Story of Liberty*, which contained one of the profoundest expositions of the ideals for which the United Nations were fighting in the Second World War, should have been pub. in Fascist Italy in 1938. His concept of truth as hist. substitutes for the 'melancholy picture of a blind humanity groping in darkness the heroic picture of mankind rising from light to light.' His other works are most voluminous. *Filosofia dello Spirito* consists of three parts: *Estetica come scienza dell'espressione e linguistica generale*, 1902; *Logica come scienza del Concetto puro*, 1904; and *Teoria e Storia della Storiografia*, 1912. He wrote also *Storia d'Italia da 1871 al 1915*, 1928, and *Storia d'Europa nel secolo decimono*, 1932. He pub. his *Autobiography* in 1918 (new ed. 1926, Eng. trans. 1927). See H. W. Carr, *The Philosophy of Benedetto Croce: the Problem of Art and History*, 1917; and A. M. Fraenkel, *Die Philosophie Benedetto Croces*

und das Problem der Naturerkenntnis, 1929.

Crochet (Fr. *crochet*, or *croc*, meaning hook), kind of knitting which consists of loops made with a hooked needle, one loop being drawn through another to form an open or solid fabric. Materials generally used are wool, cotton, mercerised cotton, pure or synthetic silk, and fine gold thread (for filigree work, etc.). The hook used must be sized according to the material and pattern. Hooks are made of steel (sizes from 2 to 7), composition, or bone (sizes 6 to 12). For over a hundred years C. has been intermittently popular, enjoying its greatest vogue during Victorian times, which was followed by an almost total eclipse. It has now regained a certain and well merited return to favour. Although blouses, slippers, handbags, shawls, bed covers, etc. may all be worked in C., its prin. uses remain those in which its beautiful, delicate, lacy effect can be appreciated to greatest advantage, as on altar cloths, the edgings of surplices and church linen in general, on table-cloths and mats, tray-cloths, and in the edgings of all kinds of linen, such as handkerchiefs, collars, trolley-cloths, etc. From the many and beautiful traditional designs of crosses, letters, grapevines, and flowers seen in church C. down to the simplest 'using up of odd wool scraps' in the making of pram and cot covers, C. has a fascination all its own. It is easy to learn and lends itself to short spells of work at odd moments, since much of it can be worked in small squares or lozenges and afterwards joined together. Designs of exquisite and intricate beauty are nowadays available to the C. worker on the chart principle which enables the pattern to be followed very easily. Two chief kinds of C. are Ger. and Victorian: *German* consists of sev. different kinds of stitches, including chain stitch, single stitch, double stitch, treble stitch, etc.; *Victorian* or *Tunisian C.* is sometimes known as C. knitting because all the stitches of a row are held on one hook, a row of chain is worked to form the base, and each stitch is then looped on the hooked needle to the end. The thread is then twisted round the hook and passed through one loop, then round again and through two loops, and thus all the stitches are worked off. This kind of C. results in a soft, pliable fabric suitable for bed covers, etc.

Many books and booklets on C. will also give instructions for allied crafts such as hairpin work, tatting (*frivolité*), knitted lace, braidwork (Bosnian C.), Tenerife lace, etc. See James Norbury, *Crochet Book*, 1952; Helen Crosier, *Crochet and Tatting and other Needlework Crafts*, 1953, and innumerable leaflets obtainable at all needlework shops or depts.

Crocidolite, mineral occurring in fibrous or asbestos-like filaments, belonging to the amphibole group. Chemically it is an iron sodium silicate. It varies in colour, sometimes being of a golden yellow, and at others of a dull red or blue-green tint. The ornamental stone has a beautiful silky lustre. When of a blue

colour it is called hawk's-eye, and when of rich golden-brown, tiger-eye. C. occurs in seams, associated with iron ores in Griqualand W. and Cape Province. It is also found in some other places, but only in small quantities.

Crockett, a carved ornament much used in Gothic architecture on the inclined sides of gables, pinnacles, canopies, spires, etc. Its design varied according to period, but invariably suggested a bud, or bunch of curved leaves, springing from a winding stem; treatment was very conventional.

Crockett, David (1786-1836), one of the classical types of Amer. woodsmen, hunters, pioneers, and fighters, b. Greene co., Tennessee. Largely self-taught. In 1813-14 he served under Gen. Andrew Jackson in the war with the Creek Indians. He entered politics and from 1821 to 1824 served in the state legislature. He served in the National House of Representatives from 1827 to 1831 and 1833 to 1835. He was a notable figure in Congress on account of his racy stories, smacking of the soil. After his last defeat for Congress he moved into the then ter. of Texas, was soon in the thick of the fighting with the Mexicans, and lost his life as one of the defenders of the Alamo at San Antonio, 6 Mar. 1836. In the days before the Civil war 'Davy' was a hero to every Amer. boy, and a revival of this hero-worship occurred in the mid 20th cent.

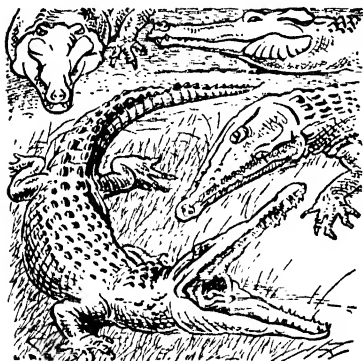
Crockett, Samuel Rutherford (1860-1914), novelist, b. Little Duchae, Kirkeudbright. Educ. at Cowper's School, Castle Douglas, and Edinburgh Univ., he studied theology and in 1886 became minister of Penicuik, Midlothian. In 1893 he pub. *The Stickit Minister*, a series of sketches, and in the following year 2 novels, *The Raiders* and *The Lilac Sunbonnet*, which were so successful that he retired from the ministry and devoted himself to writing. Among some 40 books the best-known are *The Men of the Moss Hags*, 1895, *The Grey Man*, 1896, *Kil Kennedy*, 1899, *The Loves of Miss Anne*, 1904, and *The White Plumes of Navarre*, 1909. One of the leaders of the so-called Kaillyard School, C. was much admired by R. L. Stevenson, who dedicated to him one of his best-known poems. See M. M. Harper, *Crockett and Grey Galloway*, 1907.

Crockford's, see CLUBS.

Crocodile River, see LIMPOPO.

Crocodylia (Gk. *krokodēilos*, properly an Ionic word, = (1) a kind of lizard, (2) the crocodile or alligator of the Nile), order of reptile characterised by a huge, lizard-like body, and recalling in many ways the giant Saurians with which the earth was peopled during a previous period of its existence. The whole of the existing members of the order are included in a single family, which may be subdivided into sev. generic groups; of these the most specialised are the caimans and alligators (q.v.). Common peculiarities of the Crocodylidae are a long and powerful tail; a vertical longitudinal crest on the upper surface of the body, consisting of a series of horny lobes, double in the basal

half of the tail and single beyond; and a protective armour, consisting of rows of quadrangular, horny shields of varying sizes, which overlap at the edges. The teeth, which are conical and may be of very large size, are confined to the margin of the jaws, where they are implanted in distinct sockets, and while in use are continually being replaced by fresh ones growing from beneath. A remarkable feature of the existing form of crocodile is the extremely backward position of the aperture of the internal nostrils, this being due to the development of special plates by the bones of the palate, which grow beneath the nasal passage so as to form a floor to it, and thus completely cut it off from the cavity of the mouth. (It is of particular interest that the nostrils, eyes, and external ears are situated on the upper surface of the head, so that even when a crocodile is swimming the senses associated with these structures are not



CROCODILE

impaired.) As the summit of the windpipe is continued upwards into this posterior aperture of the nostrils, crocodiles are able to breathe while their mouths are wide open and filled with water. The stomach is globular, with a pair of tendinous centres like those of birds; the digestion is rapid and powerful. As regards reproduction crocodiles lay about twenty eggs, of the approximate size of those of a goose, and covered with a hard, white shell. These are deposited in some hollow in the sand of the bank, where, after being covered to a greater or less depth, they are left for twelve to thirteen weeks to hatch. Whether the parent always assists in the incubation is not certain. The true crocodiles comprise rather less than a dozen species ranging over Africa, S. Asia, N. Australia, and tropical America. The Indian crocodile, known to natives as the mugger and erroneously to Anglo-Indians as the alligator, ranges over India, Ceylon, Burma, and the Malay peninsula and Is. It is a freshwater variety inhabiting only rivers, lakes,

and marshes, and in its characteristics most nearly approaches the caiman and the alligator.

Crococite, see CHROME YELLOW.

Crocus, genus of hardy cormous plants of the Iridaceae, about 70 species, of temperate parts of Old World. *C. nudiflorus*, Autumnal C., *C. purpureus*, Purple C., *C. biflorus*, Scotch C., and *C. flavus*, Golden C., have been naturalised in Britain. *C. sativus*, Saffron C., of Asia Minor, is cultivated for the dried stigmas, or saffron, used in medicine and as a colouring agent. The tin of Saffron Walden takes its name from its cultivation of the species. *C. chrysanthus*, *C. imperati*, *C. speciosus* and *C. tomasinianus* are garden species.

Croesus, the last king of Lydia (560-546 bc), of the Mermaid dynasty, son of Alyattes. He conquered the Ionian, Aeolian, and other neighbouring tribes, till his empire finally extended from the S. N., and W. coasts of Asia Minor to the R. Halys on the E. and the Taurus Mts in the S. His enormous wealth was proverbial, and the phrase 'a Croesus' still survives. For the legend of his interview with Solon see Herodotus, i. 29. After the overthrow of the Median empire (549), the kings of Lydia and Babylonia leagued together against Cyrus of Persia. The Delphic oracle gave C. the ambiguous answer that if he marched against the Persians 'a great empire would be overthrown.' This proved to be his own. He was utterly defeated near Sardis and taken prisoner, 546. His life was spared by the conqueror, and he is said to have accompanied Cambyses into Egypt (525 bc). The circumstances of his death are obscure.

Croft, or **Crofts**, William (1678-1727), composer, organist of St Anne's, Soho, from 1700; of the Chapel Royal, 1707; of Westminster Abbey, 1708. His *Musica Sacra* (thirty anthems and a burial service) appeared in 1724. St Anne's and St Matthew's psalm-tunes are also attributed to him, and a single chant in B minor for the Anglican service. In early life he composed overtures and airs for various plays.

Crofter. A C. is defined by the Crofters (Scotland) Act, 1955, simply as the tenant of a croft. A croft is a holding of land in the crofting cos. to which the Land-holders Acts applied or which is registered under the Act of 1955 as a croft. The crofting cos. referred to are Argyll, Caithness, Inverness, Orkney, Ross and Cromarty, Sutherland, and Zetland. Under the 1955 Act a C.s Commission was appointed which is responsible for the reorganisation, development, and regulation of crofting and promoting the interests of C.s. The commission has powers of control over the letting, assignment, sub-division, and bequest of crofts and has power to let vacant crofts and remove absentee C.s. From the barrenness of the Highlands of Scotland the condition of C.s was for long an unenviable one. Many of them, however, eked out a scanty livelihood by combining with their tillage fishing or some other occupation. The Crofters Holdings (Scotland) Act of 1886 and other

amending Acts were passed as the result of much agitation to remedy the grievances of C.s, more especially in regard to security of tenure. For some time prior to the Act of 1886 there had been numerous evictions of the C.s from their holdings, and the ensuing agitation, culminating in sev. royal commissions and many statutes, owed its strength to the belief held by the C.s themselves that their tenancies were practically perpetual. Since the Act of 1886 the C. has had a perpetual tenure, and under the 1955 Act the landlord cannot evict him unless his rent falls into arrear for one year; or he attempts to assign his tenancy; or becomes bankrupt; or is in default in other ways specified in the Act.

Crofts, Ernest (1847-1911), artist, *b.* Leeds and educ. Rugby School. He studied painting first in London and afterwards at Düsseldorf, and was elected R.A., 1896. Historical scenes of the Napoleonic and Cavalier periods were his speciality. Among his pictures are 'Cromwell at Marston Moor,' 'Marlbrough after the Battle of Ramillies,' 'Charles I. on his way to the Scaffold,' and 'Napoleon and the Old Guard at Waterloo.'

Crofts, Freeman Wills (1879-1957), detective story writer, *b.* Dublin. A railway engineer, he wrote *The Cask* in 1919 during a long illness, and it was so successful that he devoted himself to mystery stories of a similar matter-of-fact realistic kind, of which *The Pit-Prop Syndicate*, 1922, and *The Loss of the Jane Porter*, 1936, are typical. See DETECTIVE STORY.

Croisic, or Le Croisic, seaport in Loire-Inférieure, France. It is a watering-place and has fisheries; salt is produced here. Pop. 3400.

Croix, Fr. tn in the dept of Nord. It has textile and chemical manufs. Pop. 17,300.

Croix de Guerre, personal decoration for award to soldiers, sailors, or airmen of the Fr. and Belgian forces mentioned in dispatches during the two world wars. It was instituted in both countries in 1915. 'Mentions' were usually made for individual acts of gallantry, devotion to duty, or similar feats. The decoration is, of course, different in the two countries.

Croker, John Wilson (1780-1857), politician and man of letters, *b.* Galway, educ. at Trinity College, Dublin, and later called to the Irish Bar, where he rapidly made headway. In 1807 he was returned to Parliament as Tory member for Downpatrick. Perceval in 1809 appointed him secretary to the Admiralty, a position he held until 1830. He was an admirable debater, and more than once overthrew Macaulay, once referring to a speech made by the historian as 'vague generalities handled with that brilliant imagination which tickles the ear and pleases the fancy without satisfying the reason.' There is no doubt that these disquisitions had much to do with Macaulay's venomous review of his adversary's ed. of Boswell's *Johnson*, 1831. An autocratic person, he made

many enemies, and was contemptuously and unfairly depicted as 'Rigby in *Coningsby*, and, with as little justification, as Wenham in *Vanity Fair*. See L. J. Jennings, *Memoirs and Correspondence of the Right Hon. John Wilson Croker*, 1884.

Croker, Richard (1841-1922), Amer. political boss, *b.* Clonakilty, co. Cork, Ireland. His parents emigrated when he was 2 years old, and he settled in New York, where he received a common-school education. In 1868 he was elected alderman. He afterwards filled various municipal offices, ending as city chamberlain in 1890; meanwhile he had acquired great influence in Tammany Hall, and in that connection had fought Tweed in 1870. Soon after the death of Tweed's successor, John Kelly, in 1886, C. became Tammany Boss. After his resignation in 1902 he returned to Ireland. He trained horses; and one of them, Orby, won the Derby in 1907.

Croker, Thomas Crofton (1798-1854), Irish writer, *b.* Cork. At a very early age he spent his time in collecting legends of the Irish people. His chief works are *Researches in the South of Ireland*, 1824; *Fairy Legends and Traditions of the South of Ireland*, 1825-28; and *Legends of the Lakes*, 1829.

Crole, or Croleus, Robert, see CROWLEY.
Croly, George (1780-1860), author and clergyman, *b.* Dublin. Educ. at Trinity College there, he took orders in the Church of England and eventually became rector of St Stephen's, Walbrook. His pubs. show great variety, and include a novel, *Salathiel: a Story of the Past, the Present and the Future*, 1829; a tragedy, *Catiline*, 1822; and a vol. of verse, *Paris in 1815*, 1817.

Cromagnon Race, primeval European race which entered Europe in the upper palaeolithic age. The name was given by Paul Broca to a number of skeletons discovered in 1868 in the C. grotto at Les Eyzies, in the Dordogne. Other typical bones come from Wales and Mentone. Tall and long-headed, the C. R. is regarded as one of the mother-races of the Nordic and Mediterranean races.

Cromarty: 1. See ROSS and CROMARTY.
2. Parl. and municipal burgh, seaport, vil., and par. of Ross and Cromarty, Scotland, 5 m. from Invergordon. It was the bp. of Hugh Miller, the geologist, to whom a statue was erected in 1859. Pop. (par.) 1600.

3. C. Firth, one of the finest bays in Britain, is a land-locked inlet of the N. Sea, on the N.E. coast of Scotland, N.W. of Moray Firth. It is 18 m. long, 3 to 5 m. broad, 5 to 35 fathoms deep. It is entered by a narrow strait between the N. and S. Sutors, and there is a lighthouse at the entrance. The Three Kings Reef is about ½ m. from land. Miller discovered fossil fishes (Pterichthys, Osteolepis, and others) in the Red Sandstone near by.

Cromdale, par. in Morayshire, Scotland, on the Spey, 3 m. from Granton. Historically interesting on account of defeat inflicted on Jacobites by King William's troops in 1690. Pop. 3000.

Crome, John (1769-1821), usually known as **Old Crome**. Founder of the Norwich school of artists. He was b. at Norwich of humble origin. The son of a weaver, he first became an errand boy; then he was apprenticed to a house painter. Mr T. Harvey of Catton, observing his genius in his sketches from nature, which he painted in his leisure moments, procured him a post as drawing master, and from then onwards C. was able to give up a great part of his time to the subject he loved. His drawing of trees, meadows, sky, and clouds was very faithful to nature. He also made a particular study of Dutch pictures, and earned for himself the title 'English Hobbema.' In 1805 the Norwich Society of Artists assumed definite shape, and in 1808 he was elected president. His work received scant remuneration during his life. It was only after his death that the full value of his work became recognised. His best known productions are 'Mousehold Heath,' 'Poringland Oak,' and 'Moon Rise on the Yare' (all in the National Gallery, London). He also made a series of etchings of his own favourite Norfolk scenery. See D. Turner, *Sketchings by John Crome*, 1838; L. Binyon, *John Crome and John Sell Cotman*, 1908; and C. H. C. Baker, *John Crome*, 1921.

Crome, John Bernay (1794-1842), landscape painter, son of John C.; his style is very similar to that of his father, and his pictures have consequently been sold as being the productions of the older and greater painter.

Cromer, Evelyn Baring, first Earl of (1841-1917), administrator, b. in Norfolk. He entered the Royal Artillery in 1858; was aide-de-camp to Sir Henry Stokes in the Ionian Is. in 1861; and was appointed private secretary to the viceroy of India during the years 1872 and 1876. He later gained great fame for his administration of Egyptian affairs. Appointed commissioner of the Egyptian public debt in 1877, and later controller-general in Egypt, he changed the gov. from a state of threatened bankruptcy into a flourishing condition. Amongst other appointments he acted as agent and consul-general in Egypt during the years 1883-1907, being the effective ruler of the country for most of that time. He was made Baron C. in 1892, viscount in 1898, and earl in 1901. It was during his administration that the Sudan was restored to the rule of Egypt and the Brit. Empire, when the battle of Omdurman (1898) settled the question. See life by the Marquess of Zetland, 1932.

Cromer, par. and seaside resort of England, situated on the N.E. coast of Norfolk, 20 m. N. of Norwich. It is beautifully sheltered on the land side by hills and woods, and has become famous as a watering-place on account of the fine bathing which can be obtained, and the splendid beach. The extensive golf-links add to its popularity. The sea has greatly encroached on parts of the coast; the cliffs are protected by sea-walls. Fishing is the chief industry. There is a light-house visible for 23 m. Pop. 4800 (1954).

Cromlech (from the Welsh *crom*, crooked, and *llech*, a (flat) stone) was the name given by an earlier generation of antiquaries to those megalithic structures consisting of a flat stone supported horizontally on two or more uprights. In France this name is still given to a circle of standing stones. It is not now in general use in archaeological terminology.

Crompton, Samuel (1753-1827), greatest improver of cotton manuf. through his invention of the spinning mule, for which, however, he received little recognition. B. Bolton, Lancs, he lived a hard-working life as farmer and weaver. It took him 5 years' ceaseless toil to invent the machine which was to produce the finest yarn ever woven. His spinning mule became the most popular one on the mkt., and was used in preference to the machines constructed by Arkwright and Hargreaves.

Crompton, urb. dist. of Lancs, England, 2½ m. from Oldham, with cotton spinning and general engineering. Pop. 12,590.

Cromwell, Henry (1628-74), son of Oliver the Protector, under whom he served towards the end of the Civil war. He went to Ireland as a colonel in 1650, and in 1653 he was one of the Irish representatives in the Little (Barebones) Parliament. He was made lord-deputy of Ireland in 1657, and his relatively moderate policy seems to have made him popular. After his brother Richard's fall from power he returned to England (1659), retiring into private life. C. was easily the more competent of Cromwell's sons, but appears to have had little public ambition, although he discharged the duties he was given with ability.

Cromwell, Oliver (1599-1658), Lord Protector of England, b. Huntingdon, descendant of a nephew of Thomas C. (q.v.). He was educ. at Huntingdon Grammar School and Sidney Sussex College, Cambridge, and later studied law at Lincoln's Inn. He married Elizabeth Bourchier, daughter of a London merchant, and settled in his native co., leading the life of a typical country gentleman of the time, of Puritan leanings, but of no particular distinction. He sat for Huntingdon in the Parliament of 1628, and for Cambridge in the Short and Long Parliaments, 1639 and 1640. He is mentioned by Sir Philip Warwick in Nov. 1640 as 'being very much hardened to.' It seems that C. was by this time beginning to gain a parl. reputation; he was never a fluent speaker, but his ponderous earnestness and obvious sincerity gained him an eager audience among the parl. extremists. But while Pym (q.v.) and Hampden (q.v.) lived, and while the struggle was merely a battle of words and parl. tactics, C. remained relatively in the background, a loyal supporter of parl. supremacy, but not a leader; it was the Civil war (q.v.) itself which was to bring him into real prominence and give him eventually the supreme power in the country.

When war broke out C. contributed generously to parl. funds, helped to form the E. Association, which secured E.

Anglia for the parl. party, and joined the army as a captain. Impressed by the superiority of the Royalist horse at Edgehill (1642), he conceived the plan of encountering his opponents' enthusiasm with Puritan zeal and strict discipline. Raising a troop of 'godley men' in his own dist. and training them himself, they proved so efficient that the whole parl. army was gradually remodelled on the same lines (see NEW MODEL). At Marston Moor C.'s Ironsides turned defeat into victory, and at Naseby (1645) he won the decisive battle of the entire campaign. He was now recognised as the greatest soldier in England; his administrative abilities and tactical genius are still admired, and are all the more remarkable in a man who, before 1642, had had no military training or experience.

C. took part in the abortive negotiations between Charles I and Parliament, but gradually became convinced that the deposition and execution of Charles were not only politically expedient, but divinely predestined. Though in later years he was assailed by many doubts, his actions with regard to Charles I never seem to have troubled him conscientiously. He was one of Charles's judges, and signed the king's death-warrant.

The Irish campaign, with the massacres of Drogheda and Waterford, waged under C.'s command to crush Royalist resistance in Ireland, has left a permanent stain on C.'s character. Though he has often been acclaimed as unusually tolerant in an intolerant age, his savage and indiscriminate butchery of the Irish Royalist garrisons and of ordinary Irish Catholics can only be explained, though hardly justified, by C.'s conception of himself (which he certainly seems to have had, at least in moments of crisis) as a servant of the Lord sent to purify the people and root out papistry and episcopacy by any means necessary.

Returning to England, C. put an end to the Scottish alliance with Charles II by his victories at Dunbar (1650) and Worcester (1651), which increased his military reputation still further. It seemed that the Stuarts were gone from England for ever. But in 1653, impatient of the mismanagement and intrigue of the Rump Parliament, which was disregarding the demands of the army which had ensured its supreme position, and which now seemed on the verge of converting itself into a permanent oligarchy, C., on behalf of the army, forcibly dissolved the House and set up what was in practice a military despotism.

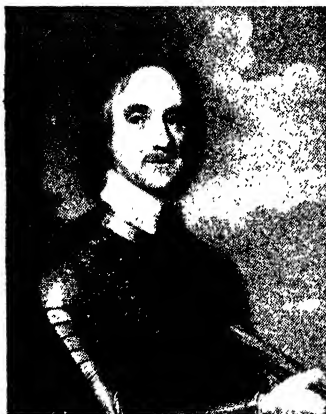
C. and the army officers made various attempts to broaden their gov. system. Firstly, they tried the experiment of calling a Parliament of selected members, the Little or Barebones Parliament (q.v.); but this, apparently so ideal to the convinced Independent in theory, proved quite unworkable in practice, and subsequently, under a written constitution, 'The Instrument of Government,' C. was installed as lord protector of England, Scotland, and Ireland. Though the Instrument gave the protector vast

executive powers, it did provide for an elected parliament, though with safeguarding clauses intended to exclude former or prospective opponents of the administration from membership. But C.'s first Parliament (1654-5) concentrated its efforts on trying to limit the protector's powers, with the result that he dissolved it as soon as he could, and for the next 18 months the administration of the country was in the hands of the major-generals. This was the period when the most concentrated attempts were made to introduce on a national scale the features for which C. is perhaps best remembered—a relative tolerance of religious observance (for Protestants of varying views, so long as they were not in favour of episcopacy) and the suppression of cock-fighting, horse-racing, Sunday sports, etc. It is also the period in which former Royalists suffered most severely materially. The major-generals were generally unpopular; in 1656 C. suspended them, and summoned his second Parliament, which offered him the crown and revived a second chamber. It is fairly certain that C. would have accepted the crown but for the objections of the army; in fact, after the dissolution of this Parliament in Jan. 1658 he was king in all but name, and in practice it is clear that his gov. since 1653 had been virtually free of parl. restraints, the prin. curb on his arbitrary rule being the equally arbitrary decisions of the powerful clique of army officers.

His foreign policy was aimed at Eng. commercial greatness and Protestant supremacy, and in the interests of the former aim he was quite prepared to ally with a Catholic state, France, to fight another Catholic state, Spain. Under C. and his admiral, Blake (q.v.), the Eng. navy became a great striking force; a council of trade was estab. and a charter granted to the E. India Company. Though C. himself did not live to see it, his policy did, in fact, secure the W. Indies for Britain.

C. d. in Sept. 1658 and his gov. began to crumble almost immediately, an indication of the fact that it was ultimately based on C.'s exclusive personal rule. He was buried in Westminster Abbey, but at the Restoration his body was disinterred and hanged at Tyburn. Of his 6 children who survived infancy Richard (q.v.) succeeded him as Protector, but proved entirely ineffective; Henry (q.v.) had a successful career in Ireland; Bridget married first Gen. Ireton and then Gen. Fleetwood; Elizabeth, C.'s favourite, who predeceased him, married John Claypole; Mary married Lord Fauconberg; and Frances married first a grandson of Lord Warwick and then Sir John Russell. Historical judgments on C.'s personality and achievements vary widely. He has been portrayed as merely one more ruthless dictator; but it is fairly clear that his progress to supreme power was not accomplished without sev. sincere attempts to find some workable alternative, and certainly not without considerable painful heart-searching on

C.'s part. If his career presents constant contradictions, this can be explained by the conflict within C. himself between the various facets of his complex character—the political theorist and Puritan idealist, the fighting man of action, and the opportunist statesman. His military achievements in the Civil war in the long run ensured the permanent defeat of monarchical absolutism and the survival of Eng. parl. institutions, though had his own despotism survived his lifetime it is doubtful if this would have been the case. See T. Carlyle, *Letters and Speeches of Oliver Cromwell* (ed.), 1850; S. R. Gardiner, *History of England*, 1884; *A History of the Civil War 1642-60*, 1893; and *The Constitutional Documents of the Puritan Revolution* (latest ed.), 1910; and lives by C. H. Firth, 1923, J. Buchan, 1934, M. Ashley, 1940, and R. S. Paul, 1955.



OLIVER CROMWELL

Engraving after the painting by Robert Walker.

Cromwell, Richard (1626-1712), Lord Protector of England, eldest surviving son of Oliver C. He served in various Parliaments under his father, and on Oliver's death in 1658 was proclaimed Protector. He had little capacity for, or interest in, gov. and was in effect deposed by the army in 1659. At the Restoration he went to the Continent, returning to England about 1680, and living in retirement until his death. See life by R. W. Ramsey, 1935.

Cromwell, Thomas, Earl of Essex (c. 1485-1540), statesman and courtier, b. Putney of humble parents. He served in the Fr. army in Italy, but returned to England about 1513 and engaged in cloth-dressing, money-lending, and legal practice. From about 1514 he was in Wolsey's service, serving him faithfully, and speaking in his defence in the House of Commons in 1529. He had entered Parliament in 1523. He became privy

councillor, 1531, and Henry's chief minister after Wolsey's fall, being one of the king's chief agents in bringing about the Eng. Reformation and in strengthening Tudor absolutism. He advocated Henry's divorce from Catherine of Aragon by exercise of royal supremacy. In 1533 he was chancellor of the exchequer; in 1535 vicar-general to enforce the carrying out of the Act of Supremacy (1534). To him was largely due the suppression of the monasteries and confiscation of their property as a means of securing revenue, which earned him the nick-name *Malleus monachorum* (hammer of the monks). C. became lord privy seal, 1536; lord chamberlain, 1539; and Earl of Essex, 1540. His influence with the king at one time was very great, and he was deservedly dreaded by and unpopular with both nobles and clergy. His foreign policy was less successful. He was anxious to link England with the Protestant states of Europe, and to this end arranged the marriage of Henry and Anne of Cleves (q.v.). His failure was partly responsible for his downfall; but, in any case, by 1540 C. had outlived his usefulness to the king, who had used him and been influenced by him, but had never liked him. In 1540 he was accused of treason, found guilty and beheaded, protesting that he d. a Catholic. See M. Drayton, *Historie of the Life and Death of Lord Cromwell*, 1609; R. B. Merriman, *Life and Letters of Thomas Cromwell*, 1902; and life by P. Wilding, 1935.

Cronin, Archibald Joseph (1896-), doctor and novelist, b. Cardross, Dumbartonshire. Educ. at Dumbarton Academy and Glasgow Univ., he practised medicine in Wales and London. The great success of his novel *Hatter's Castle*, 1931, enabled him to give up medicine for writing. Others of his books are *Three Loves*, 1932, *Grand Canary*, 1933, *The Stars Look Down*, 1935, *The Citadel*, 1937, *The Keys of the Kingdom*, 1941, *The Green Years*, 1944, *Shannon's Way*, 1948, *The Spanish Gardener*, 1950, *Beyond This Place*, 1953, and *Crusader's Tomb*, 1956. *Jupiter Laughs*, 1940, is a play.

Cronje, Piet Arnoldus (1835-1911), Boer gen. of Huguenot extraction, was at one time member of the executive council of the Transvaal Republic and chief native commissioner. He led his men against the Brit. at Doornkop and Majuba Hill; was also responsible for forcing the garrison of Potchefstroom to capitulate, purposely suppressing the news of the armistice (1881). In 1895 he made the Jameson raid of no effect. On the announcement of the Transvaal war, he joined in the hostilities against the Brit., but was defeated in his attack on Kimberley. Gained a victory over Lord Methuen at the Modder R., and later at Magersfontein. Was forced to retreat before Gen. French in the siege of Kimberley. In spite of the efforts of the 2 Boer generals, De Wet and Botha, to come to his aid, he was forced to surrender with a force of 4000 men and 6 guns at Paardeberg on 27 Feb. 1900, the anni-

versary of the battle of Majuba. He was sent to St Helena, but was allowed to return at the end of the Transvaal campaign.

Cronstadt, see **KRONSTADT**.

Cronus (the Rom. **Saturnus**) was the son of Uranus, one of the Titans, and of Ge (or Gaea), the earth. He married Rhea, by whom he had many children, among them Hera (Juno), Hades (Pluto), Poseidon (Neptune), and Zeus (Jupiter). He dispossessed Uranus of the throne of heaven, and was himself dethroned in turn by his son Zeus.

Crook, George (1828-90), Amer. general, b. Ohio. Made himself famous both in the Civil war and in his resistance to the attacks of the Indians in Idaho during the years 1866-72, and again 11 years later in Arizona.

Crook and Willington, urb. dist. of co. Durham, England, some 9 m. from Durham city, a coal-mining area. Pop. of urb. dist. 27,606 (pop. of C. 12,800; of W. 8100).

Crooked Islands, two is. of the W. Indies, belonging to the Brit. group, Bahamas. They consist of Acklin, or Great Crooked Is., and Little Crooked Is. To the westward of Great Crooked Is. is Castle Is., upon which is a lighthouse, whose light is visible at a distance of about 18 m. Another lighthouse is situated on Bird's Rock, W. of Little Crooked Is. The Spaniards took possession of the is., but they were restored to England in 1783. The pop. of 1300, mostly Negro, is engaged in cotton and banana production.

Crookes, Sir William (1832-1919), physicist and chemist; b. Loudon, eldest son of Joseph C., a tailor. He was first a student at the Royal College of Chem. under Hofmann; then made superintendent of the meteorological dept of the Radcliffe Observatory, and gave lectures on chem. at the Science College. F.R.S., 1863; and vice-president of the Chemical Society, 1870. Obtained a prize of 3000 francs and a gold medal from the Fr. Académie des Sciences. An authority on all sanitary questions. Made many original discoveries in chem. and physics; viz. of the metal thallium (1861), and of the rare earth monium or victorium. An expert in electricity; invented the radiometer and C's tubes. In addition to various technical works he wrote a standard treatise on *Select Methods in Chemical Analysis*, 1871, and a small book on *Diamonds*, 1909, a subject to which he had devoted some study during visits to S. Africa. Knighted in 1897, president of Brit. Association in 1898, O.M., 1910. Amongst the many contributions made by C. is his theory that all the elements have evolved from one primordial stuff, 'protyle.' See F. d'Albe, *Life of Sir William Crookes*, 1923.

Crookhaven, fishing vil. in the co. of Cork, Rep. of Ireland, 30 m. distant from Skibbereen. It is the most southerly vil. in Ireland. Pop. 150.

Crooks, William (1852-1921), politician, b. Poplar. One of the earliest of the Labour leaders, he became mayor of Poplar in 1901. He entered the House of

Commons in 1903, and in 1916 was made a privy councillor.

Crookstown, small tn with milling industries in co. Cork, Rep. of Ireland, between Bandon and Macroom.

Crop, term used in speaking of certain dilatations of the alimentary canal of some animals. It is situated in an anterior position to the true stomach, and serves as a reservoir for food. In birds it is often called the *craw*, and is noticeable especially in predaceous and granivorous species; in the C. of the pigeon are 2 small accessory sacs. Insects also have these dilatations immediately preceding the proventriculus. In some, e.g. bees, the food can be disgorged from the C. for the benefit of the young.

Cropedy and Cropedy Bridge, par. in Oxon., England, 4 m. distant from Banbury. C. Bridge is memorable for the victory gained by Charles I over Waller, 1644. Pop. 430 (1951).

Crops. This general term for the agric. produce of the soil, the return of the farmer's labour, has been classified in many ways. Thus we speak of white C., that is of those plants such as wheat or barley and other grain which turn white as they ripen; of green C., those which are harvested green, such as clover, grasses, including also roots, potatoes, etc.; so too we have black C., especially used of beans and peas. A more convenient and more useful classification is now usually adopted, that of *cereal*, *leguminous*, and *root C.* The cereals include wheat, barley, oats, rye, maize; the leguminous clover, beans, peas, vetch, sainfoin, lucerne; the roots turnips, swedes, and mangels, and often also cabbage, kail, carrots, and potatoes. Further, there are special C. of importance to the world production of the soil, such as rice and its congeners, and the industrial cotton crop. Farmers in very early times knew that the planting of the same crop in the same ground, year in year out, exhausted the soil; thus it is that in primitive times we find the 'shifting' system prevailing in which, after a piece of land was exhausted, the farmer moved on and exhausted another. Sometimes we find primitive peoples moving as a community as the soil was exhausted—nomad agric. communities like the early Teutonlo peoples mentioned by Tacitus and Caesar. Virgil's *Georgics* exhibits a knowledge of rotation of C., for he bids the farmer either lay his ground fallow every alternate year, or let the rotation of spelt or pulse vetch, or lupine, prevent the exhaustion of the soil; and he combines copious manuring with rotation. The more full development of crop rotation took place in England when the old common-field system of farming by small tenants still prevented any but the large landowner from making use of the scientific rotation of which Lord Townshend was the pioneer. By the beginning of the 19th cent. rotation was nearly everywhere in force, and numerous systems, differing according to the nature of the soil, climate, altitude, and general situation, etc., were to be found. In

countries such as Italy a very wide selection of following C. is made use of, and there a 6 or even 8 years' system is found. In modern Brit. farming roots or leguminous C. alternate with the cereals. It must be remembered that cereals are exhaustive, for not only do they not accumulate the nitrogenous and mineral constituents of the soil, but they are not used on the farm, and all they have taken from the soil is sold off, while roots and clover, as feeding stuffs for stock, return these constituents as manures. The famous 'Norfolk' four-course system, roots, barley, clover, wheat, is typical of the rotation system. The root crop is also useful for allowing cleaning of the ground by hoeing between the rows. C. mainly exhaust the soil of phosphoric acid, nitrogen, and potash, but different C. each do this to a different extent, and in some

non-sterilised soil, the leguminous plants developed nodules at the roots and flourished without manure; these nodules are found in all leguminous plants growing in natural, non-sterilised soils, and are caused by micro-organisms, *Rhizobium radicicola*, which absorb nitrogen from the air through the nodule, break down, and in turn are absorbed by the plant. See also AGRICULTURE, Crops; ROTATION OF CROPS; NITROGEN CYCLE, THE. See L. Bailey (ed.), *Cyclopaedia of Farm Crops*, 1922; H. G. Sanders, *An Outline of British Crop Husbandry*, 1949; H. I. Moore, *Crops and Cropping*, 1949; W. Fream, *Elements of Agriculture*, 1955.

Croquet. Antiquarians have traced the descent of this game from Pell Mell or Pall Mall, Fr. *paille-maille*, which was fashionable at the end of the 17th cent. in London, and was played with hoops, a



High Commissioner for Canada

CROPS AT INDIAN HEAD, SASKATCHEWAN

cases stock consume the C. and return some of the minerals to the soil. These are the main losses of minerals by the growth of C., and must be replaced by mineral manures. Leguminous crops are valuable as they accumulate much nitrogen in the soil. It is this fact that makes a crop like red clover such a splendid preliminary for a cereal crop. This has been known as a practical fact by farmers in times long past (see Pliny, *Natural History*, viii); its reason was not known till the experiments of Hellriegel and Wilfarth in Germany in 1888. Experiment had shown that a piece of land laid down for a long time in pasture and then sown for 15 years with lupines contained three as much nitrogen as it contained before, which could only have come from the air. The test was made with leguminous plants in sterilised soil side by side with oats and barley. They were both obliged to be fed with nitrogenous manures. With a mixture of

ball, and mallet, the object being to run a ball through the hoops and strike a peg in the fewest strokes. The game, somewhat as it is played to-day, seems to have been first played in Ireland in 1852, and it became popular before 1860. As then played, there were 10 hoops with a double hoop or cage in the centre. In 1868, the All England C. Club was formed, and championship games were played at Wimbledon. For some years C. was played everywhere where a lawn was available, but it was a family or garden party game. Lawn tennis practically killed it, and a revival in a new form did not take place for some 20 years. In 1897 was formed the C. Association, the ruling body, with the centre of the game at Roehampton. The new C. is very scientific, and the utmost skill and care are exercised in the laying of lawns, in the selection of mallets, and the making of the balls.

The ground is a level grass lawn 35 yds.

long by 28 yds. wide; in the centre of the court is a peg; there are 6 hoops of iron rods, $\frac{1}{2}$ to $\frac{3}{4}$ in. in diameter, 12 in. from the ground when fixed, $3\frac{1}{2}$ in. wide. The hoops are placed thus (the unit of measurement from line 1, etc.): Nos. 1, 2, 3, and 4 are placed 7 yds distant from the base and side lines; Nos. 5 and 6 are placed in the centre 7 yds from the peg. The order of playing hoops is as follows: 1, 2, 3, 4, 5, 6, then 2, 1, 4, 3, 6, 5, and winning peg. No. 5 is the 'rover' hoop. There are 4 balls, $3\frac{1}{2}$ in. diameter, and 15 oz to 16 oz in weight. Composition balls are now used for match play. Two, playing 2 balls each, or 4, playing 1 ball each, are the number of players, blue and black against red and yellow; after the game has begun and all 4 balls are in play, a player may play with either ball of his side. Each player has a metal clip, coloured as his ball, which must be placed on the hoop or peg next to be passed through or struck. The mallets must have wooden heads with straight faces exactly alike, the head usually weighing about 3 lb. The points of the game are scored by each ball passing the hoops and striking the peg in order, and the winning player (or 2 players in partnership) is he who makes all possible points with both balls. The ground is marked with a white chalk band round base and side lines and a spot 3 ft. from the lines is placed at each angle. The start of each player is made from any point between the centre of the base line and the left corner at either end of the ground. Two terms used in the game need to be explained: roquet is to strike another ball with one's own; croquet is, after making a roquet, to take up the striking ball, place it against the ball struck wherever it may have rolled, and then play so that both the balls in contact are moved. If a player fails to make a point, i.e. to pass through a hoop or strike the peg (or both, in, of course, the proper order as stated above), or if he fails to roquet another ball, he ends his turn, and the next player in turn plays. If he succeeds in making a point, he has another stroke; if he roquets, he then takes croquet, plays the stroke or has another stroke after the balls have been struck or croqueted. In the old game, the player could place his foot on his own ball, but this has been disallowed for many decades. Also opponents' balls could be driven out of play; now no ball must be croqueted across the boundary line; if it is, the player does not play his second stroke and loses his turn. The ball out of bounds is replaced 3 ft. from the line where it crossed.

With a true lawn and a knowledge of tactics the game can be as skilful in combination and in power of leaving balls for the next stroke or strokes as billiards. Special attention must be given to the various strokes made in making roquets. If the player wishes to take his second stroke at some distance he rushes the object ball, that is, strikes it so hard that it travels a considerable distance. A skilful player can, with his

ball, cut the object ball so that it goes off at an angle; he may by striking his ball on the top make a follow through as in billiards. Wiring an opponent, i.e. leaving his ball so close to a hoop or peg that he has no free stroke at an object ball, is another test of skilled play. If, however, an opponent is wired so that no object ball is possibly available, he may lift his ball and go back to the starting point or baulk. The best way of holding the mallet and standing has been much discussed. A swing or pendulum stroke is from every point of view the best, and it may be made either by standing facing across the ball and swinging the mallet between the legs, or by standing with one foot or both in a line parallel with the ball and swinging the mallet with the right hand lower down and the left at the top; but the methods of grip are as various as those of golf. There is an elaborate system of handicapping for tournaments by means of bisques, which are extra turns. The game is very popular in Australia, New Zealand, and S. Africa, and since 1925 a series of test matches has been played between most of these countries for an international shield, won in 1956 by Great Britain. The address of the C. Association is 4 Southampton Row, London, W.C.1. In the U.S.A. the older form of C. has survived but a special form, known as roque, extremely scientific answers more to the scientific modern Eng. C. It is played not on grass, but on an artificially prepared ground which is 60 ft by 30 ft, with 4 corners cut off 6 ft in length, thus making a hexagonal court. There are 10 hoops and 2 pegs which stand 12 in. and 18 in. out of the ground respectively. The most marked difference in the game is the rubber-faced board surrounding the ground against which a player may strike his ball and cause it to rebound into play, as off a billiard cushion; this stroke is called a *carom*. See the C. Association's *Laws of Croquet*, and periodical *Croquet*. There are many good books on the hist. and scientific methods of play, notably Lord Toller-mache *Croquet*, 1914; and M. B. Reckitt, *Croquet To-day*, 1954. See also C. D. Locock, *Modern Croquet Tactics*, 1907.

Croquill, Alfred, see FORRESTER, A. H.
Crore (Hindu *karor*), word used in both India and Pakistan for 10,000,000 or 100 lakhs (usually) of rupees. The value of a C. of rupees, at an exchange of 1s. 6d. to 1 rupee, is about £750,000.

Crosby, Bing (real name Harry) (1904-), Amer. singer, actor, and radio performer, b. Tacoma, Washington, educ. Gonzaga College. He left school to be a vocalist with a dance orchestra; he sang with Paul Whiteman's band, later becoming a featured performer on the radio. He appeared in a number of short films when sound was first introduced, then in the feature film *The Big Broadcast*. His best-known films are probably *Pennies From Heaven*, *Holiday Inn*, *Going My Way* (for which he won the Academy Award for the best male performance of 1944), *The Bells of St Mary's*, *Blue Skies*, *White Christmas*, and *High Society*. He

also made a famous series of 'Road' films with Bob Hope (*Road to Singapore*, etc.). Latterly he has attempted more serious roles in *Little Boy Lost* and *The Country Girl*. He has written *Bing and Call Me Lucky*, 1953, also popular songs.

Crosby, Frances Jane (1820-1915), Amer. hymn-writer, b. Southeast, Putnam co., New York. Blinded in infancy, she entered New York Institution for the Blind in 1835, and was a teacher there from 1847 to 1858. In the latter year she married Alex Van Alstyne, a blind music teacher, who d. in 1902. Her hymns had worldwide popularity, the best-known being 'Safe in the arms of Jesus.'

Crosby, Howard (1826-91), Amer. preacher, b. New York. He graduated at the univ. of the City of New York (now New York Univ.); was prof. of Greek there in 1851, and at Rutgers College, New Brunswick, New Jersey, 1859. He was chancellor of the univ. of the City of New York 1870-81, and in 1873 moderator of the Presbyterian general assembly. He took a prominent part in politics and social reform. His son, *Ernest Howard C.* (1856-1907), a social reformer, was b. in New York and graduated at the univ. of the City of New York in 1876. He was president of the Social Reform Club of New York City and the New York Anti-Imperialist League. He pub. many works in the manner of Walt Whitman.

Crosby, municipal bor. on the NW. coast of Lancs, England, between Liverpool and Southport, mainly residential with a large rural area. C. was granted a charter of incorporation in 1937, when the anct tn of Great C. and the more recent Waterloo-with-Senforth (dating from about the time of the battle of Waterloo) were amalgamated. The Merchant Taylors' School (1620) is at C. C. Hall, Little C., has been the home of the Blundell family for many cents. C. also includes Blundellsands. Pop. 58,362.

Crosier, or Crozier, originally the bearer of the episcopal crook (*crociarius*); finally the crook itself was called C. It is the pastoral staff, part of the insignia of the bishop, carried by bishops and, in a slightly different form, by abbots. Probably derived from the *lituus* of Rom. augurs. See O. Taylor, *Archaeologica*, 52. 'On the Use of the Terms Crosier, Pastoral Staff, and Cross.'

Cross, Mary Ann, or Marian, see ELIOT, GEORGE.

Cross, Richard Assheton, first Viscount (1823-1914), politician, b. near Preston, and educ. at Rugby and Trinity College, Cambridge. He first entered Parliament as a Conservative in 1857, and in 1868 defeated Gladstone in S. Lancs by 313 votes. Although of comparatively untried ability he was appointed by Disraeli in 1874 to the post of home secretary with a seat in the Cabinet, and was responsible for carrying through much notable social legislation. He was made a viscount in 1886.

Cross, riv. which rises in the Cameroons in W. Africa. This riv. is navigable for three-quarters of its course and enters the Bight of Biafra.

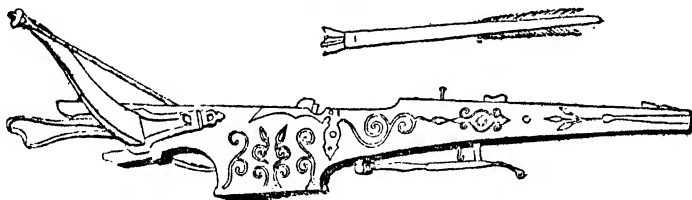
Cross (Lat. *cruz*), in anct times a common means of punishment, Phoenician in its origin, and used by Indians, Persians, Medes, Greeks, and Romans. Originally crucifixion was by fastening or impaling the victim on a stake, the *cruz simplex*. But the various forms of the *cruz compata* (made of 2 pieces) are better known. The *cruz commissa*, known also as the Tau (from the Gk capital T) and C. of St Anthony (the name for the Lat. C. in the Middle Ages), consists of an upright with the C.-piece at the top. In the *cruz immissa*, or Lat. C., part of the upright extends above the C.-piece. This is the form best known in the W.; the Gk C., with 4 arms of equal length, is a variant of it. The *Celtic C.* is the Lat. C. with a circle round the head. The *cruz descussata*, saltire, or St Andrew's C. (traditionally St Andrew suffered martyrdom on a C. of this shape) has 2 beams crossing obliquely. From these 4 varieties countless smaller types have been evolved by Christian symbolism. Even before the time of Christ the C. was also in use as a religious emblem. By the anct Egyptians the *cruz ansata* was regarded as the symbol of life, and in Gaul as a symbol of the sun. The Sp. conquerors of S. America were astonished to find the C. venerated there as the sign of the god of rains. In the reign of Constantine, the sign of the C. in the form known as the *labarum* became the official standard of the empire. In 325 St Helena, mother of Constantine, went to Jerusalem to seek the true C. and found 3 C.s; by the advice of Macarius, patriarch of Jerusalem, a sick woman was laid on them in turn. When laid on the third she regained her health, and the miracle identified the C. of Christ. Relics of the C. (most of them extremely minute) spread through the world, and the feast of the Invention or Finding of the C. is celebrated in the W. Church on 3 May. The feast of the Exaltation of the C., celebrated E. and W. on 14 Sept., commemorates its recovery by Heraclius (AD 628) after capture by the Persians. The veneration paid to relics of the C. in early times led to the great iconoclastic controversy. The iconoclasts (q.v.) wished to do away with such veneration, but the Church decreed that *latreia* (relative veneration) might indeed be paid to the wood of the C., though the worship is referred back to the person of the Crucified. In the W. Rite the Veneration of the C. takes place in the Liturgy of Good Friday. At the singing of the anthem, 'Behold the wood of the cross on which hung the Saviour of the world,' a crucifix is kissed with great reverence by the clergy and people. The sign of the C. used as an act of confession of faith or of prayer and blessing was made in the early Church with the thumb on forehead or mouth. In the E. Church it is made with the first 2 fingers and the thumb, from forehead to breast, then to the right shoulder and then to the left. The general W. use is from left to right with open hand, though Lutherans use only the thumb. The C. or crucifix on the altar is common to Rom. Catholics,

Anglicans, and Lutherans alike. *Processional C.s* head eccles. processions. *Pectoral C.s* are worn on the breast by bishops and abbots. In the case of metropolitans, an *archiepiscopal C.* takes the place of the bishop's crosier (q.v.).

In architecture *sanctuary C.s* marked the verge of a sanctuary. These and the *boundary or monumental C.s* consist of an upright pillar or obelisk set in a heavy socket level with the ground. Some marked boundaries, but most of them the grave of some king, bishop, or important hero. The oldest of these *C.s* are Scandinavian and, bearing inscriptions in runes, are known as *runic C.s*. The Ruthwell *C.* is a good example. The Is. of Iona once contained 360 monumental *C.s*, but only one, that of St Martin, is now standing. The famous *Eleanor C.s* were erected in 1290 by Edward I at each place where the body of his wife Eleanor rested for a night. That of Charing was destroyed in the 17th cent., the present *C.* in the courtyard of Charing C. railway station in London being a modern copy. *Town or market C.s* were pulpits whence sermons and addresses might be given. At Chichester and at

consisting of a short stout winged shaft with metal point, was laid in a groove at the top, and the string was released by a trigger. The larger *C.s* may almost be considered as engines of war, so cumbersome were they. See Sir R. Payne-Gallwey, *The Crossbow*, 1903.

Cross Country Running developed from steepchases held at such schools as Rugby, Shrewsbury, Eton, etc. At Rugby the Crick Run was instituted in 1837 and is still held annually. A race organised in 1867 by the Thames Rowing Club as part of their winter training programme led to the formation of C. C. clubs. The first National Championship was staged in 1876 at Buckhurst Hill in Epping Forest, but the race was declared void as the competitors lost their way. The 1877 championships were more successful and Thames Hare and Hounds, a club which is still in being, were the first team winners. In 1880 Birchfield Harriers (Birmingham) won the championships for the first time, since when they have been successful on 27 occasions, a record unequalled by any other club. An international race was first instituted in 1903 between England,



CROSS-BOW AND QUARREL

Cheddar they consist of open vaulted structures. Paul's *C.* was erected by Henry III in 1259. It was demolished in 1643 as an offence to the Puritans. The present *C.*, surmounted by a picture of St Paul, was erected in 1911 and has a pulpit for giving addresses. The Scottish *tn C.s* early lost their religious character, and were used for royal and civic proclamations. See G. de Mortillet, *Signe de la croix avant le Christianisme*, 1866; J. Stuart, *Sculptured Stones of Scotland*, 1867; E. Bunson, *Das Symbol des Kreuzes bei allen Nationen*, 1878; G. F. Browne, *The Ancient Cross Shafts at Newcastle and Ruthwell*, 1916; W. G. Collingwood, *Northumbrian Crosses of pre-Norman Age*, 1927; and R. Guénon, *Symbolisme de la croix*, 1931.

Cross, Southern, see SOUTHERN CROSS.

Cross-bow, or **Arbalest**, weapon used chiefly during the 12th and 13th cents., after which it gave place in England to the less cumbersome long-bow. It consisted of a bow, made of wood, iron, or steel, attached to a wooden stock, similar in shape to the butt of a musket. The bowstring was pulled back by a lever which in the smaller instruments was worked by hand or foot, and held in position by a notch. The bolt or 'quarrel,'

Scotland, Ireland, and Wales. France first took part in 1907, Belgium in 1923, Spain, Italy, Switzerland, and Luxembourg in 1929, Holland in 1950, Yugoslavia in 1953, and finally Portugal was admitted to the circle in 1956. An Englishman, Alfred Shrubbs of S. London Harriers, was the first individual winner, and in the year 1957 another Englishman, Frank Sando, won the event. In the years preceding England provided the winner on 27 occasions, France 10, Scotland 2, Belgium 2, Ireland 1, and Yugoslavia 1. D. A. G. Pirie, K. L. Norris, F. D. Sando (England) and A. Mimoun (France) are among the best C. C. runners of recent years. In 1928 the C. C. race was omitted from the Olympic Games programme as an unsuitable event for a summer meeting. The sport is comparatively unknown outside Europe, where it is most widely practised in France and Belgium. See ATHLETICS.

Cross-examination, see EVIDENCE.

Cross-talk, interference between 2 telephone lines running parallel to one another for a long enough stretch to make the inductive effect noticeable.

Crossbill, bird of the genus *Loxia*, native of Europe, Asia, and N. America, chiefly in pine forests. The *C.* gains its

name from its curious bill, in which the upper mandible crosses over the lower one at the point. This enables it easily to tear and break the scales of the pine cones on which it chiefly feeds. The common red C. (*L. curvirostra*) is the best known, and occurs sometimes in Scotland. The plumage of the female is orange-green or grey-green. The C. only occurs in Britain as a migrant.

Crossen, see KROONO.

Crosshaven, seaside resort, 13 m. S.E. of Cork, Rep. of Ireland, on the wooded estuary of the Owenboy R. It has boat-building and a yacht club. Pop. 850.

Crosshead. The C. in an engine is the block which, fixed at the end of the piston-rod, works between parallel guides, and so takes up the sideward thrust due to the obliquity of the connecting-rod, thus enabling the piston-rod to work in a straight line. It is generally made of cast iron, but is also of wrought iron or cast steel, and the slide bars between which it works are of wrought iron or steel with bearing surfaces of brass.

Crossing, in architecture, the space formed in a cruciform church by the intersection of the E.-W. arm (nave and choir), with the N.-S. arm (transepts). In medieval churches it was often crowned with a central tower; at St Paul's Cathedral it lies under the dome.

Crossley, Ada (1874-1929), famous Australian contralto; b. Tarraville, Gippsland, Victoria. Educ. at Port Albert, Gippsland; taught music by Alberto Zelman and Fanny Simonson. In London, after 4 months under Sir Charles Santley, sang first at Queen's Hall, 18 May 1895.

Crossley, Sir Francis (1817-72), b. Halifax, Yorks, and became a celebrated carpet manufacturer. He accumulated an enormous fortune, which he bestowed very liberally on the Congregational Church and on various charities connected with his native tn. His business success was obtained by the introduction of steam instead of manual labour and to the system of patenting new inventions. He was created a baronet in 1863. After retiring from business he purchased Somerleyton Hall, Lowestoft.

Crossopterygians, members of the subclass Choanichthyes (or bony fishes with internal nostrils) and sometimes called fringe- or lobe-finned fishes because of an extension of the flesh and internal skeleton into the paired fins. The body was covered with cosmoid scales and the skull with dermal bones. They had functional lungs and internal nostrils, and were closely related to the lungfishes. The pointed teeth show labyrinthine infoldings of enamel, of particular interest because identical teeth occur in the primitive amphibians known as labyrinthodonts (q.v.). The crossopterygians are thus probably the stock from which land vertebrates arose. They are mainly Devonian and Carboniferous in age, but one group, the coelacanth (q.v.), has persisted until the present day.

Crossword Puzzle, offshoot or variant of the acrostic. The C. P. consists of a diagram which comprises blank and blocked-

in squares, the blank squares ultimately to contain letters and the blocked-in spaces to show the beginning or termination of a word. When the letters are all filled in they help to form words arranged horizontally and vertically. Clues to the words are given with the diagram, and may be either straightforward or deliberately ambiguous. The most usual diagram consists of a square of 15 spaces each way, the blanks forming a symmetrical pattern, but oblongs and pictorial shapes are often used, and in some cases a thickened line takes the place of the blocked-in space. Crosswords of a childish sort were not unknown to the nursery magazines of the last century, but the vogue did not start until the early 1920's, when a New York publisher took hold of what at that time was a little noticed feature of a Sunday newspaper and brought out the first crossword puzzle book. Its success was remarkable. Crosswords began to appear in newspapers and magazines, and the Amer. public was captured. In England they then met with a general and enthusiastic welcome, and soon became almost as familiar in a paper as the title-page. The crossword puzzle has lasted a remarkably long time in England, practically all newspapers and many magazines supplying crosswords for their readers; the daily *Times* succumbed to them in 1930, after holding out for seven years. The majority of crosswords have simple solutions, but those in *The Times*, *Sunday Times*, *Observer*, *New Statesman* and *Nation*, *Spectator*, etc., give scope for research. Various periodicals have organised crossword competitions, usually with alternative solutions for many words, only chance directing the right choice of solution. The *jeu de mots croisés* attained a certain popularity in France, and the *Morning Post* pub. sev. C. P. in Fr. for Eng. readers. *The Times* has issued sev. in Lat. The C. P. has been used with success for commercial advertising purposes.

Crotalus, genus of ophidian reptiles or pit-vipers, a sub-family of Viperidae. There are about eleven species, characterised by the presence of a tail rattle and the covering of small scales on the top of the head. All are to be found in America, and are known as rattle-snakes. *C. durissus*, a native of the U.S.A., is the common rattle-snake (q.v.).

Crotch, William (1775-1847), composer, b. Norwich. At the age of four he played the organ in London. In 1786 at the age of eleven he became assistant organist to Randall at Trinity and King's Colleges, Cambridge. Three years later he wrote an oratorio, *The Captivity of Judah*. After some time as a theology student at Oxford, he finally in 1790 turned again to music, and was appointed organist in Christ Church Cathedral. He became Prof. of Music at Oxford in 1797, took his D.Mus. in 1799, and in 1822 became first principal of the Royal Academy of Music in London. He wrote for the organ, piano, and voice, and was the author of a work *Elements of Musical Composition and Thorough Bass*.

Crotchet, character or note in music, equal in duration to a quarter of a semi-breve or two quavers. Amer. terminology, following Ger. instead of Eng., now uses 'quarter-note' for C., but this is illogical and confusing, since a semi-breve, as its name implies, is itself one half of a larger unit, the breve, which would make the C. aa 'eighth'; and there is moreover the possibility of confusion with 'quarter-tone,' which is a matter of pitch, not of time-value. A C. rest indicates silence for the duration of a C.

Croton, riv. of New York, U.S.A., and a trib. of the R. Hudson, into which it flows when about 35 m. distant from the city of New York. The new C. Dam impounds C. Lake, whose waters are carried to New York City by C. Aqueduct.

Croton, large tropical genus of Euphorbiaceae, contains many species with important medical properties. *C. cascarilla* is a native of Santa Domingo and Florida, and yields the cascarilla bark. *C. tiglium*, an inhab. of the Moluccas and Ceylon, is one of the most active and drastic of purgatives, woods, leaves, and fruit all containing the property. The seeds were formerly called grains of Tilly or Molucca grains, and the oil expressed from them is the powerful C. oil. The oil consists of a mixture of fatty acids and their glycerides, notably acetic, butyric, valeric, and methyl crotonic acids; the purging quality of the oil seems due to crotonic acid. A single drop administered internally acts as a drastic purgative; its action is too powerful for ordinary use, but it is employed with good effect in the case of unconscious or insane patients. *C. laciferum* furnishes a very fine lac and a brilliant varnish. *C. sanguinum* yields a deep red resinous substance resembling dragon's blood (q.v.); *C. balsamiferum* is aromatic and the liqueur called *eu de Mantes* is distilled from it.

Crotona, or **Croton**, Gk colony founded from Achaea (710 bc) in Calabria, Italy. It is the modern Crotona on E. Coast of Calabria. By 510 bc it was strong enough to destroy its neighbour, Sybaris. It was famous in antiquity for the school of Pythagoras, a school of medicine, and as the bp. of Milo, the athlete. Later it lost its independence, and became part of the Rom. empire. See CROTONE.

Crotona, or **Coirone**, lt. fort. seaport, in Calabria (q.v.), on the E. coast of the Calabrian peninsula, 30 m. NE. of Catanzaro (q.v.). It is on the site of the ant. *Crotona* (q.v.). It has a cathedral, and a fine citadel. There are zinc-smelting and chemical industries. Pop. 31,600.

Crotophaga, sub-family of the family Cuculidae (cuckoos), peculiar to the New World, including sev. species. The chief member is the Ani, Black Parrot, or Savannah-bird, which extends from the S. States of N. America throughout most of S. America. Its plumage is glossy black, and its strange shape has also gained it the name of the Black Witch.

Crouch, riv. of Essex, England, flowing into the North Sea at Foulness. Burnham-on-C. is a favourite yachting centre. Length, 24 m.

Croup, inflammatory condition of the larynx, with swelling of the vocal cords and consequent narrowing of the laryngeal aperture, causing a typical harsh, barking type of cough and, in severe cases, rasping breathing. Before diphtheria immunisation became the rule, this infection was a common and dangerous cause of croup.

Crow, bird of the genus *Corvus*, of the family Corvidae. The family is distributed over almost the whole of the globe, though there are very few species in the E. part of Australia or in S. America. They include C.s, magpies, jays, and choughs, and may be subdivided into a large number of species. The colour of the true C. is black, generally a glossy black, often tinged with white at the edges of the feathers. But more distant members of the family are brownish: the Jackdaw has grey at the back of the neck, and the hooded C. (*C. cornix*) is grey on the back and under parts. The choughs also vary from the common black in their red feet and red or yellow bills. The Corvidae have strong and generally straight bills, with no notch in the upper mandible. The wings are long and pointed, except in the jays and magpies, where they are shorter. The tail is long and graduated, usually with twelve rectrices, of which the middle ones are longer than the others. The C. is regarded by all naturalists as the highest family of birds. The intelligence of all of them is great in the extreme, and innumerable stories are told of their craft and cunning. Many of them vary their own disagreeable notes by imitating those of other birds. Among these the Amer. blue jays are the most noted. They may also be taught to imitate the human voice. C.s are omnivorous, eating animal, fish, and vegetable foods indifferently. They show themselves very adaptable to circumstances, and devour almost anything edible.

Crow Indians, aboriginal Amer. Indian tribe of Siouian linguistic stock, living mainly in Montana. They number about 2000. See R. H. Lowie, *The Crow Indians*, 1935.

Crow Steps, see CORBIE STEPS.

Crowberry, or *Empetrum nigrum*, species and genus of Empetraceae which grows chiefly in the N. temperate zone and in the Andine Mts. The plant is an evergreen shrub with small crowded leaves, and the fruit is a black edible berry of a juicy nature, sometimes used in making wines. The fruit owes its name to its reputation for attracting crows, and in rookeries it is often used for decorative purposes.

Crowd, musical instrument, see CRUTCH.

Crowfoot, see RANUNCULUS.

Crowland, or **Croyland**, par. and tn of Lincolnshire, England, close to the R. Welland, 9 m. N. of Peterborough. There are the ruins of an ant. abbey, part of which is now the par. church. The original abbey was built by Ethelbald in 716, in keeping with a promise made to St Guthlac, patron saint of the present church. The Danes destroyed the abbey in 870, and it has a considerable history of

burning, sacrilege, and rebuilding. There is also a 14th cent. bridge, bearing a statue. The exact identity of the figure is unknown, the three most probable suggestions being Our Lord holding a loaf of bread, Ethelbald, or Alfred holding a crown. Pop. 3500.

Crowle, par. and tn of Lincolnshire, England, situated in the Isle of Axholme, 5 m. ESE. of Thorne by rail. Pop. 3010.

Crowley, Crole, or Croleus, Robert (c. 1518-88), archdeacon of Hereford in 1559, and four years later prebendary of St Paul's. He produced the first printed metrical version of the psalter and also brought out an admirable typographical ed. of the *Vision of Piers Plowman* in 1550.

Crowley, cap. of Acadia par., Louisiana, U.S.A. Centre of a rice-growing country. Pop. 12,800.

Crown, in architecture, either (i) the highest point of an arch, vault, or dome; or (ii) a type of steeple formed by curved buttresses converging on to a central pinnacle, and thus resembling a crown; as at Newcastle (cathedral, St Giles' Cathedral (Edinburgh), etc.

Crown, paper size, see PAPER.

Crown (Lat. *corona*), known from very ancient times as a headdress for kings, priests, or warriors. C.s were used by the Egyptian kings, often very elaborate in style, but extremely simple at the time of the Ptolemys. In classical times the C. was usually a circular ornament of metal, in the form of a chaplet of leaves or flowers, worn on solemn and festive occasions. Among the Greeks it was an emblem of office (as in the case of the archons), or frequently a reward for victors in the Hellenic games (Olympic, Isthmian, etc.). As a reward for exceptional services to the State it was a much-prized honour among the Romans. Among the various kinds were the 'corona obsidionalis' of grass or wild flowers, given to the general who rescued a besieged army; 'corona civica' of oak-leaves and acorns, given to the soldier who saved a fellow citizen's life in battle; 'corona navalis', a gold circlet ornamented with beaks of ships for the winner of a naval victory; 'corona muralis', similarly adorned with battlements, for the first who scaled the walls of a besieged city; 'corona vallaris', with palisades, for the first to break into the enemy's camp; 'corona triumphalis', awarded to the general who was granted a triumph. Among the emblematical C.s were the 'corona sacerdotalis', worn by those engaged in sacrifice; 'corona funebris' or 'sepulchralis' for the dead; 'corona convivalis' of banqueters; 'corona nuptialis' or bridal C. In Germany, Norway, and medieval England the bridal wreath or C. was often of metal. As used in modern times for an emblem of sovereignty the C. was borrowed from the diadem (fillet of silk or wool) of oriental origin. Alexander the Great adopted this from the Persian kings. Rom. emperors are represented with the diadem, laurel C., or radiating C. (symbolising the deification of the emperors). The diadem of Constantine the Great was replaced in

the 6th cent. under Justinian by the 'stemma,' an elaborated golden fillet. Still more elaborate C.s succeeded this in turn, until the present arched C. became the usual form. At the Norman Conquest a circle of pearls set in gold was the C. of Eng. kings. In the 12th and 13th cents. this was heightened by strawberry leaves or trefoils. That of Henry IV had strawberry leaves and fleurs-de-lis alternately, with 16 small groups of pearls. Edward IV's was arched over with jewelled bands of gold closing under a mound ensigned by a cross pattee, crosses pattee replacing the strawberry leaves, and roses or fleurs-de-lis the pearl clusters. The Brit. sovereign now uses 2 C.s. 'St Edward's' C. is used only for the actual ceremony of coronation. On all other occasions the Imperial State C. is worn. This latter is magnificently jewelled; it was made originally for Queen Victoria in 1838. (See Wickham Legg, *English Coronation Records*, 1901.) The Pope's C. is a high uncleft mitre (see TIARA). The C. of the former Austrian empire was cleft in the centre, but resembles the mitre in appearance. This style was adopted by Maximilian II in 1570. A single arch surmounted by mound and cross rose from the cleft. The C. of Scotland, discovered in 1818 with other regalia in Edinburgh Castle, probably dates (with the exception of its arches) from the days of Robert Bruce. The iron C. of Lombardy, restored to the King of Italy, 1866, was a gold circle with a thin fillet of iron inside, said to have been hammered from a nail of the true cross, and alleged to date from the time of Pope Gregory the Great (AD 590-604). The C. of the Ger. Empire had 8 shields, the larger bearing the cross, the smaller the imperial eagle. There were 4 arches surmounted by mound and cross. C.s are often seen in heraldic bearings or coats-of-arms. (See M. Holmes, *Crowns of England*, 1937; and M. Bowen, *Crowns and Sceptres*, 1937.)

In constitutional law and practice, 'the C.' is a comprehensive symbolical expression denoting the members of the legal sovereignty in whom is vested the supreme executive power. The executive gov. of the Brit. Commonwealth (except those member states which are reps.) is carried on in the name of the C., and all its public acts are theoretically done by right of the royal prerogative. But all public acts of the C. are also done on the advice of the ministers of the C., with the result that the formerly personal prerogatives of the sovereign have become the privileges of the executive, which by the conventions of our unwritten constitution are in their turn a reflection of the privileges of the people. The C. as a term connoting the sovereign and his or her ministers expresses the responsibility of the latter for every public act of the former, and the expressions 'descent of the C.' or 'succession of the C.' therefore mean the devolution of the paramount executive power from one monarch or titular head to his or her successor. The result of the constitutional limitations on the monarch's theoretical sovereignty is

that the prerogative of the C., which Blackstone defines as 'a special pre-eminence which the king hath over and above all other persons, and out of the ordinary course of the common law in right of his royal dignity,' has become gradually narrowed in its content. The term prerogative, as indicating the ancient customary powers of the C. springing from the early character of the kingship as a tribal chieftaincy, and later the feudal overlordship, is in these days better regarded, in Prof. Dicey's words, as 'nothing else than the residue of discretionary or arbitrary authority which at any given time is legally left in the hands of the Crown.' It is a term which has caused much perplexity to the constitutional lawyer, but the various rights, privileges, and attributes composing the prerogative are clear. The common law prerogatives of the C. or the privileges of the executive comprise various legal attributes of sovereignty, privileges resulting from those attributes together with certain powers which may be said either to be inherent in any sovereign entity, or which are merely the survivals of more ancient times. The attribute of perfection of judgment expressed in the maxim that 'the king can do no wrong' puts the C. above the law, but results in the practice that ministers are liable for all royal acts, and that no administrative act can be done by the C. without the counter-signature of some responsible minister. The maxim is subject, however, to the curious interpretation that when the sovereign makes an illegal grant or wrongfully confers a franchise, he has merely been 'deceived in his grant,' with the consequence that the grant can be upset as contrary to public justice. The C.'s claim asserted by the Stuarts to suspend or dispense with estab. laws and vested rights was formally denied by the Bill of Rights, 1689—nor can the C. violate the common law. With such limitations as these it becomes clear that the maxim has lost its original force, and serves rather to demonstrate the transfer of legal liability to ministers rather than the moral perfection of the sovereign's judgment. But the personal immunity of the sovereign from liability finds expression in the fact that no subject can sue the king in his own courts, but must sue the gov. dept responsible for the act complained of (Crown Proceedings Act, 1947). An equally important attribute of the sovereign is his traditional perpetuity expressed in the maxim that the king never dies. The C., indeed, is a corporation (q.v.) sole with perpetual succession. The common law terminated all appointments held 'during pleasure' on the demise of the C., but the statute of 1 Ed. VII, c. 5, by providing that such offices shall not be affected by a demise, brought the practice into accord with the maxim. Other prerogatives concerning the royal authority *per se* are that lapse of time cannot bar the right of the C. to sue or prosecute; the subordination of the right of the subject when it conflicts with that of the sovereign; the immunity of the

sovereign from any statutory obligation unless bound by express language or by necessary implication; and the privileges flowing from the theory that the sovereign is never a minor.

But there are numerous limitations on these prerogatives also, e.g. the right of the C. to claim real property as against the adverse possession of the subject is barred after 50 years; succession duty cannot be claimed by the C. after 12 years from the date of the death giving rise to the succession, or where the Inland Revenue authorities have 'slept on the C. rights'; and indictments for treason, other than cases of attempted assassination of the sovereign, cannot be preferred after 3 years from the commission of the crime. Again, royal minorities are always provided for by statute, and it is generally conceded that the sovereign is bound, whether named expressly or by necessary implication or not, by, *inter alia*, statutes for the preservation of public rights, statutes for the public good, or for the suppression of public wrongs. Other prerogative powers include the right to receive and send ambas. from and to foreign countries; the power to make treaties, leagues, and alliances with foreign nations; the power of issuing letters of marque and reprisal where not abrogated by treaty; the power of declaring war and making peace; and the power of granting safe conducts to alien enemies. But there is considerable doubt whether the C. can cede land to a foreign state during the time of peace, or interfere with the position of the subject without Parliament's sanction, and the House of Commons can stop supplies for the payment of a war declared by the C. The prerogative of the C. to assent to and dissent from Bills sent up for the royal assent is now reduced to a shadowy veto which has never been exercised since the reign of Anne. As the fountain of justice the sovereign can create common law courts for the empire beyond the seas and pardon offenders (*see also* CRIMINAL LAW); as *parens patriae* he has the nominal custody of all infants and lunatics, as the arbiter of commerce can erect markets and coin money, and as the fountain of honour confer titles of nobility. The royal prerogative touching revenue matters confers on the C. the ownership of waifs, strays, treasure trove, wrecks, and the personal estate of intestates dying without next of kin, and enables the C. to levy customs, excise, stamp and death duties, and income tax. As the orthodox head of the Estab. Church, the C. appoints, on the recommendation of the Prime Minister, archbishops, bishops, and other dignitaries of the Church, and entertains appeals from eccles. courts through the judicial committee of the Privy Council. Wherever the term 'king' is used in the foregoing remarks, it is, of course, to be understood equally of a queen regnant. (For the Councils of the Crown, *see* CABINET.) *See* L. G. W. Legge, *English Coronation Records*, 1901; G. J. Youngblood and C. Davenport, *The Crown Jewels of England*,

1919; and G. Williams, *Crown Proceedings*, 1948.

Crown, name of various coins which represent different values in different countries, but all with a crown as reverse. The origin of the word C. is to be found in the Fr. word *couronne*, the name of a gold coin issued by Philip of Valois in the early 14th cent. Towards the close of the same cent. another Fr. king, Charles VI, issued a coin called the *écu de la couronne*. The C. did not appear in England until the reign of Henry VIII, and then it was a coin consisting of a mixture of gold and silver, the value of which represented 5s. It was in the reign of Edward VI that the image of the king appeared on the large silver coin, seated on his horse bearing the royal shield of arms. Queen Elizabeth appeared crowned on the later coins. The C. of Charles II's reign was covered with 4 shields typifying England, Scotland, Ireland, and France. At the present time the C. is worth 5s. in England. The

many public bodies overseas. The C. A.'s principals now include the govts. of Ceylon, Ghana, Iraq, and Libya, and a great many municipalities, local gov. authorities, corporations, and other public bodies. They also act on behalf of the United Nations Korean Reconstruction Agency, and for the U.K. Gov. in the supply of stores under the Technical Co-operation Scheme of the Colombo Plan (q.v.). The present title of the organisation was adopted in 1954 in consequence of the extended range of their activities. The income of the C. A.'s organisation is derived from fees on the business transacted, and not from public funds, although the numbers and remuneration of the staff are controlled by the secretary of state. The office is non-profit-making, and the fees for its services are adjusted from time to time in accordance with this principle. The staff of approximately 1500 includes professional engineers and executives of experience in many fields of business.



CROWN OF CHARLES II

C. of Denmark, Norway, and Sweden is very small in value and represents the sum of a little over 1s.

Crown Agents. In the 18th cent. the governors of Brit. colonies appointed their own agents in the U.K. to act as intermediaries between themselves and the Crown and to perform a variety of commercial and other services. In 1833 the business of a number of the separate agents was consolidated in one estab. under 2 'Joint Agents General for Crown Colonies' appointed by the Treasury. In 1863 the title was changed to 'Crown Agents for the Colonies' and in 1880 the Treasury ceased to exercise control. Since that date and up to the present time (1957) the C. A. have been under the general supervision of the secretary of state for the colonies, who is not however concerned in the detailed execution of business, on which the C. A. take instructions direct from their oversea principals.

The C. A.'s services are available not only to colonial govts. attaining independence but to certain foreign govts. and

The services which the C. A. provide as financial and commercial agents for their principals include inspection, shipment, and insurance of plant, equipment, and stores to a value of £70 million annually; advisory and consultant service in engineering matters; the recruitment of staff for certain gov. appointments overseas, the booking of passages and payment of salaries and pensions; and the management of cash and invested funds and (in the case of colonies) the floating of loans and the function of registrars of stock.

The C. A.'s offices are at 4 Millbank, London, S.W.1. There are branch offices in the City of London, in other cities of the U.K., and in Washington, D.C.

Crown Cases Reserved, Court for. Before the institution in 1907 of the court of criminal appeal the C. for C. C. R., consisting of the judges of the high court, or 5 of them at least, of whom the lord chief justice had to be one, was the tribunal to which was reserved any question of law that might have arisen in a criminal trial, whether at the central

criminal court (q.v.), the assizes, or quarter sessions. Unlike the court of criminal appeal, which replaced the C. for C. C. R., the latter court could not hear appeals on questions of fact, or mixed law and fact.

Crown Colony, see OVERSEAS TERRITORIES.

Crown Debts, those debts which are due to the Crown, e.g. fines, penalties, and which are contradistinguished from debts due to the subject principally by reason of the priority they enjoy in the administration of the estate of a deceased person who has *d. insolvent*. The old common law allowed the Crown (q.v.) to recover C. D. summarily by a writ of *extant* against the debtor's land and goods, and to follow that property into the hands of whomsoever it went. Apparently the Crown still has this power, but it cannot take copyholds in execution. The Crown's lien on the debtor's property as against a *bona fide* purchaser for value of the debtor's property only extends to specialty debts (i.e. created by deed), and debts of record (judgment debts, recognisances, and others, see DEBT); it does not extend to a simple contract debt. Rates and taxes, so far as they can be said to be C. D., are preferential debts in the administration of the estate of a bankrupt, but otherwise C. D. have no priority over other debts when an estate is administered in bankruptcy. In the administration of the estate of a deceased person, debts due to the Crown by record or under a bond or covenant are paid first, where the estate is solvent, but simple contract debts due to the Crown merely enjoy priority over all other kinds of simple contract debts. Where the estate is insolvent C. D. enjoy a like priority where the estate is administered by the legal personal representative or by the chancery div.; but where it is administered by the court of bankruptcy, C. D. are, it seems, payable *pari passu* with other debts due under judgments, specialties, and simple contract. In winding-up proceedings of a company, C. D. are allowed. C. D. stand in the same position as in the bankruptcy of an individual.

Crown Derby, see DERBY.

Crown Estate, lands enjoyed in right of the Crown, the profits from which form part of the hereditary revenues of the Crown, or revenue which the Crown has had from time immemorial. Since 1760, when George III. surrendered those and other revenues for a fixed sum or civil list and for other considerations, they have been collected on the public account. At the time of the surrender the gross revenues amounted to about £89,000, and the net return to about £11,000. In the year ended 31 March 1956 the total receipts were £2,890,000, and the net return was £2,270,000. At the present day the C. E. comprises one of the largest landed estates in the United Kingdom. The C. E. includes all Mines Royal, i.e. mines of gold and silver. The Crown title to foreshore or land between high and low water-mark, and the bed of the sea and navigable rivers, is limited by the public

rights of navigation and fishing from boats and rights incidental thereto. The C. E. is exempt from taxation in the absence of express or implied words to the contrary in the Acts imposing the different burdens. The head office of the C. E. commissioners is in Whitehall.

'Crown News,' see ARMY NEWS SERVICES.

Crown Office, dept. of the central office of the supreme court of judicature. Its official head is the clerk of the Crown in the queen's bench (q.v.), now generally entitled the queen's coroner and attorney and master of the C. O. The work of this office relates to the administrative business on the Crown side of the queen's bench div., and also of the divisional courts of that div. The duties of the queen's coroner, which are very numerous, are *inter alia* to issue informations in the nature of *quo warranto* for misdemeanours in agreement to the order of the court; to attend at the sittings of the divisional courts, so as to inform the judges on questions of practice and procedure, and take minutes of the proceedings; to administer the oath of allegiance to judges or magistrates on their appointment; and to keep in safe custody the records of the C. O. pending removal to the record office (see CUSTOS ROTULORUM). The judicial business of the Crown side of the queen's bench is transacted either in court or before the judges or the master of the C. O. in chambers. The ministerial business as conducted in the C. O. includes a great number of matters, including, especially, the issuing of writs of *habeas corpus*, writs of subpoena and attachment, and orders of prohibition, mandamus, and certiorari.

Crown Point, tn in Essex co., in New York, U.S.A., and 36 m. distant from Burlington. It is situated on Lake Champlain, and contains the ruins of a Brit. fort captured by the Americans in 1775. Pop. 1660.

Crown Solicitor, see TREASURY SOLICITOR.

Crowne, John (c. 1640–c. 1703), Brit. dramatist, b. Nova Scotia. He began a literary career in England with his romance *Pandion and Amphigenia*, 1665, one of the few Eng. heroic romances after the manner of Scudéry. Though of no very striking talent as a dramatist, he found favour at Charles II's court, and his plays were successful, some being acted in the 18th cent. Among them are *The Country Wit*, 1675; *The Destruction of Jerusalem by Titus Vespasian* (2 parts), 1677; *Thucydides*, 1681; *City Politiques*, 1683; *Sir Courtly Nicc*; or, *It Cannot Be* (his best work), 1685; *The Married Beau*; or, *The Curious Impertinent*, 1694; *Caligula*, 1698. His dramatic works were pub., with a memoir, by J. Maidment and W. H. Logan, 1873–7, and a bibliography by G. P. Winship, 1922. See A. F. White, *John Crowne, His Life and Dramatic Works*, 1922.

Crowther, Samuel Adjai (1809–92), missionary bishop of Africa, b. in Yoruba and sold as a slave in 1821. He was rescued with his comrades in 1822, and sent to

Sierra Leone. The Church Missionary Society took an interest in him; he became a convert to Christianity and came over to England to the Church Missionary College at Islington. He was ordained by Bishop Blomfield, and on returning to his own country he trans. the Bible and Prayer Book into Yoruba and other dialects. Was created bishop of the Niger ters, in 1864, and d. in 1892 after a life of strenuous labour and great piety.

Croydon (Domesday *Croindene*; formerly *Croydene*, saffron valley), par., municipal, and co. bor. of Surrey, England, 10 m. from London, in the diocese of Canterbury. The par. of C. is 25 m. in circumference. C. sends three members to Parliament. It owes its growth and popularity to general trade, attractive residential quarters, and proximity to London. The par. church dates back originally to about AD 960, was rebuilt probably by Archbishop Courtenay (d. 1396), and again after the fire of 1867 (see below). The archiepiscopal palace, now used by the Kilburn sisters as a girls' school, was the residence of the primates until 1757. The Whitgift Hospital was founded in the reign of the first Elizabeth. Archbishop Whitgift's endowment also endows the grammar and middle schools. Others were endowed by Archbishop Tenison, 1714. Adult education is provided at the C. Polytechnic and the C. School of Art. The prin. assembly hall is the civic hall, formerly the hall of the N. End Brotherhood. It has accommodation for 871 people. Before its acquisition it was badly damaged in air raids, an oil bomb having brought down half the roof. It was restored as far as war conditions allowed. There is a fine tn hall, a theatre, public libraries, and barracks. There are a number of light engineering and other factories, and a clock and bell foundry. The world's largest carillon of 72 bells for the Riverside Church, New York, was cast at this latter factory. The airport covers 400 ac. and cost £267,000. Extensions of the C. General Hospital costing £80,000 were opened in 1927. Warrlingham Park Hospital has accommodation for 1121 patients and is noted for progressive and modern methods of treatment of those suffering from mental and nervous disorder. The C. crematorium was opened in 1937, with a chapel built in the Gothic style. In 1896 the central library was opened in Katharine Street, which, as part of the architectural pile of the tn hall, possesses premises as imposing as those of any public library in the S. of England. The library was one of the earliest to adopt the 'open access' system. The branch library in Brigstock Road, Thornton Heath, was opened in 1914. In 1926 provision was made for numerous other branch libraries, but the Second World War arrested completion of the scheme. The large electricity undertaking suffered considerable damage in 1940, when a 500-kilo bomb hit the power station, and in 1944 a flying bomb exploded in the engine room; but by 1947 practically the whole of the damage had been made good. The new electricity showrooms and

offices at Wellesley Road were occupied in 1941. The present programme of the electricity undertaking includes a new generating station, partially completed, with an ultimate capacity of 310 MW. There are numerous parks and recreation grounds and open spaces covering a total area of 2165 ac. Addington Hills is a natural park of 130 ac., consisting of a plateau of 460 ft altitude with heather and fir trees. Other parks are New Addington (94 ac.), Beaulieu Heights (19½ ac.), Ashburton Park (18½ ac.), Selsdon Wood (200 ac.), Grangewood (on Norwood Hills), a 30 ac. park on a commanding site; and Norwood Grove (3½ ac.), noted for its trees, flowers, and birds.

From the evidence of relics which are preserved in the tn hall, C. seems to have been the very centre of the SE. Saxon settlement. Legend has it that the original par. church was founded by the Christian soldiers of Aulus Plautius, but this is not verifiable; when the 13th-cent. church was built portions of an early Saxon church were discovered. An early document by which Archbishop Æthelred exchanges C. land with Duke Ælfred is the first extant reference to the age-old connection of the archbishops of Canterbury with C. The Domesday Survey shows that (c. 1085) the manor of C. (later known as the archbishops' palace and to-day as the old palace) was in the lordship of Archbishop Lanfranc, and that there was a church and some 200 inhab. From the time of Lanfranc the archbishops occupied this manor as their summer residence. The archbishops gave C. its first fair and first market (1276), their purpose being, it is said, to supply the needs of the pilgrims passing through C. to the shrine of St Thomas at Canterbury. Among famous guests at the manor were James I of Scotland, the prisoner-guest of Archbishop Arundel, in 1412; Catherine of Aragon, who after her divorce sought refuge there; Mary Tudor; and Elizabeth Tudor, who made several visits to C., the first in 1573 as the guest of Archbishop Parker. Whitgift, the most intimate name in the record of the archbishops at the palace, founded the hospital of the Holy Trinity, known as the Whitgift Hospital, in 1596, for the use of the aged poor of Lambeth and C. The archbishops withdrew from the palace in 1757; in 1808 they bought Addington Palace, which became their residence outside London until 1896. It has since been bought by the C. Corporation, and is leased to the Royal School of Church Music, which removed there from Canterbury in 1953. Grindal, Whitgift, and many other archbishops are buried in the par. church of St Mary, Addington. The eccles. par. of C. still remains in the diocese of Canterbury, and the B. of Croydon is one of the suffragans of the archbishop, who is bishop of the diocese. One of C.'s most famous citizens was Lord Howard of Effingham, who lived and died at Haling House, the site of which is now occupied by Whitgift School. Addiscombe House, later called Addiscombe Place, built by the son-in-law of John Evelyn, was the home of Lord Liverpool in the early nineteenth

century. In 1809 this house became the military seminary of the E. India Company, where, among others, Lord Napier of Magdala, Lawrence of Lucknow, and Lord Roberts of Kandahar received their training. At the beginning of the nineteenth century the pop. of C. was 6000. With the opening of the London to C. railway to traffic, the pop. was increased to 16,000. This enhanced the difficulties of local government, and C. was the first to adopt the Public Health Act, and to constitute a local board of health. Among the chairmen of the board were Cuthbert Johnson, who, in his spare time, compiled an extensive MS. history of C. (to be seen in the C. reference library), and Wm. Drummond. Among its most noted officers was Baldwin Latham, the engineer who not only built the water tower at Park Hill (now disused), but designed

reason, the charter was never received or made operative. C. had to wait 200 years before, in the year 1883, the charter of incorporation was granted by Queen Victoria. In 1889 C. was granted the powers and duties of a co. bor., with control of its own highways, education, and public health services. The town now has its own bor. courts and quarter sessions. Pop. 249,592.

Crozet Islands, group of volcanic is. situated in the S. Indian Ocean at almost equal distances from each other between the Cape of Good Hope and Kerguelen Is. The names of the prin. is. are Possession, East, and Penguin. Sixteen is. are uninhabited. The C. I. are a Fr. dependency of Réunion, and have an area of 200 sq. m.

Crozier, Francis Rawdon Moira (c. 1795-1848), naval officer, b. in Ireland. He made 3 voyages with Capt. Parry to the



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WHITGIFT SCHOOL, CROYDON: MAIN QUADRANGLE

waterworks at Vienna and elsewhere in Europe. C. was a pioneer in air transport, with the building of the aerodrome at Waddon in 1916; Lindbergh landed there from Paris after his solo crossing of the Atlantic. Until the Second World War C. was the airport of London, not, as it is to-day, one of the airports of the metropolis reserved for charter aircraft. The first bombs that fell in the London area in 1940 fell upon C., some months before the continuous attack on C. and London began. In the flying-bomb period it was the most bombed tn in England, and suffered great devastation. The death-roll was, however, low owing to evacuation and good shelter accommodation.

It is on official record that Queen Mary II in council actually approved a charter as a bor. to C. (21 May 1691), but that, owing to the default of the secretary of state (probably the second earl of Nottingham) or for some now undiscoverable

Arctic regions in 1821-7, went to the Antarctic Ocean with Capt. Ross in the *Terror* in 1839-43, and sailed as second officer in Franklin's last expedition in 1845 to discover the NW. Passage, dying in the polar regions. The party was not heard of till Capt. McClintock found a record (signed, April 1848, by Capt. C.) on King William Is. in 1859, stating that the explorers were about to start for Great Fish (now Back) R. under C.'s command. See Sir F. L. McClintock, *Fate of Sir J. Franklin*, 1859.

Crozier, John Beattie (1849-1921), Canadian historian and philosophical writer, b. of Scottish parents in Ontario. Among his works, written from the viewpoint of the evolutionist, are *The Religion of the Future*, 1880, and *Civilisation and Progress*, 1885. A civil-list pension was granted him in 1894, and doubled later to enable him to carry out his studies. Other pubs. are *Lord Randolph Churchill: a*

Study of English Democracy, 1887; and *History of Intellectual Development on the Lines of Modern Evolution*, 1897-1901.

Crozon, seaport of France, in Finistère, on Douarnenez Bay, 10 m. from Brest, with sardine fisheries. There is a fine beach at Morgat near by. Pop. 7700.

Crucian Carp, or *Carassius carassius*, fresh-water fish of Europe and Asia, closely allied to the goldfish. It is a member of the Cyprinidae, or carp family, and differs from the carp chiefly in having no barbels. It sometimes bears the name of Prussian carp.

Cruciferae, family of ann. to perennial herbs in 220 genera, about 1900 species, dicotyledons; with alternate leaves, perfect flowers, usually with 4 sepals, 4 petals forming a cross, 6 stamens, 2 stigmas, superior ovary usually 2-celled, and a pod-like fruit, usually dehiscent. Contains important food plants, especially of the *Brassicæ* genus, and many ornamental plants, as well as weeds, but no poisonous plants. *Alyssum*, *Arabis*, *Aubrieta*, *Brassica*, *Cheiranthus*, *Cochlearia*, *Draba*, *Erysimum*, *Iberis*, *Lunaria*, *Matthiola*, *Nasturtium*, *Raphanus*, *Sinapsis*, *Thlaspi*, and *Vesicaria* are well-known genera.

Crucifix (Lat. *cruci fixus*), literally 'the Crucified One,' a cross with the effigy of Christ upon it. The C. began to replace the plain cross in churches in the reign of Constantine (d. A.D. 337). The Gk Church did not acknowledge them, and they were not commonly used in the E. till the close of the 8th cent. They were general in the W. by the Carolingian period. The earliest C.s presented Christ clothed, with open eyes, but pierced by 4 nails. The symbolic sacrificial lamb often figured on the cross, with a medallion bust of Christ, as in the Vatican cross. Later Christ appears naked except for a loin-cloth, fastened by 3 nails.

Cruden, Alexander (1701-70), scholar, b. Aberdeen, son of a bailie. He was educ. at Marischal College, Aberdeen, and then for a time confined for symptoms of insanity, finally coming to London (c. 1722) as tutor and bookseller. He became bookseller to the queen, 1735. His *Complete Concordance to the Holy Scriptures of the Old and New Testament* (including a concordance to the Apocrypha) appeared in 1737. Later he acted as a press reader, and called himself 'Alexander the Corrector' of national morals. His *Scripture Dictionary* was pub. in 1770.

Cruden, par. and coast tn of Aberdeenshire, Scotland, 8 m. from Peterhead. A battle between Malcolm II of Scotland and Canute (later King of England) is supposed to have been fought here. Pop. 3000.

Cruelty to Animals, see ANIMALS.

Cruelty to Animals Act, 1876, designed to protect animals from unnecessary suffering when used for experimental purposes (vivisection). This act permits experiments on animals for the advancement of science. Persons engaged in such experiments must be licensed and when pain is likely to be caused the use of an anaesthetic is compulsory unless the

object of the experiment would thereby be defeated. See PROTECTION OF ANIMALS Act.

Cruelty to Children, see CHILDREN, NATIONAL SOCIETY FOR THE PREVENTION OF CRUELTY TO.

Cruikshank, George (1792-1878), caricaturist and artist, b. London, the son of Isaac C. (c. 1756-c. 1811) and the younger brother of Robert C. (1789-1856), both of whom also achieved success as caricaturists. George C. had no training in art, though he once made an abortive attempt to enter the academy schools, but he was a born artist, and began to sketch as a child. Some of his drawings at the age of 7 have been exhibited. In 1811 he began to contribute to the scurrilous periodical *The Scourge*, and within a few years he was on the staff of other papers, and had begun to illustrate books. He issued many cartoons after the style of Gillray, and the subject of a considerable number issued in 1814 and 1815 was, naturally enough, Napoleon. In the latter year he became associated with Wm Hone, the author and bookseller, and his illustrations to Hone's lampoons on George IV and the managers of the queen's trial, such as 'The Queen's Matrimonial Ladder,' 'Non mi ricordo,' and 'The Man in the Moon,' attracted much attention. These squibs against George IV were reissued as *Facetiae and Miscellanies*, 1827. In 1818 he issued the first of his pictorial sermons, the famous 'Bank Restriction Note,' through which he claimed, with some reason, to have caused the death penalty for forgery to be abolished. Subsequently he issued a series of 8 plates, 'The Bottle,' 1847, and an oil-painting, 'The Worship of Bacchus,' 1862, in which he preached temperance and showed the downward path of the drunkard. Of these, perhaps, he was more proud than of any others of his work. Other temperance prints were 'The Gin Bottle,' 'The Gin Trap,' 'The Gin Juggernaut,' 'The Drunkard's Children,' and 'Sunday in London.' His other oil-paintings include 'Titania and Bottom,' 'Cinderella,' 1854 (now in the Victoria and Albert Museum), 'The Fairy Ring,' 'Grimaldi Shaving,' and 'Disturbing the Congregation.' In later years he devoted himself largely to the illustration of books, and in this direction he was particularly successful with Dickens (*Oliver Twist* and *Sketches by Boz*), Almsworth (*The Tower of London*, and 6 other books), Thackeray (*The Legend of the Rhine*), Fielding, Smollett, and Sterne. His industry was prodigious and his output enormous. He contributed largely to the *Comic Almanack*, 1835-53, the forerunner of *Punch*. Among the popular books of the period illustrated by C. are Grimm's *German Popular Stories*, 1823-6 (containing possibly his best work), and *Fairy Tales*, 1827; Scott's *Waverley Novels*; *Memoirs of Grimaldi*, 1838; *Don Quixote*, 1833; *Points of Humour* (2 vols.), 1823-4; *Bentley's Miscellany* (containing his illustrations of Almsworth's *Jack Sheppard*). *The Table Book* and *The Omnibus* were magazines

of his own. His last known work, a frontispiece to Mrs Blewitt's *The Rose and the Lily*, was done when he was 83. Three years later he d., and was buried at Kensal Green, but shortly afterwards his remains were removed and interred at St Paul's. In caricature (q.v.) he carried on the work of Rowlandson and Gillray, but without their ferocity and coarseness; in humorous drawing he stood alone, and as an illustrator he has not been excelled. He was at his best, in this last branch of art, in depicting the grotesque and terrible. See W. B. Jerrold, *The Life of George Cruikshank*, 1883; W. M. Thackeray, *An Essay on the Genius of George Cruikshank*, 1884; A. M. Cohn, *George Cruikshank: a Catalogue Raisonné*, 1924; R. McLean, *George Cruikshank*, 1948.

capacity was greatly improved. After these came the protected C., to which class belonged the *Edgar*, launched in 1893, having a displacement of 7350 tons and a speed of 19 knots. This was followed in 1895 by the *Powerful* type (displacement 14,200 tons, speed 22 knots). Later on came the class of armoured C.s of the *Cressy* type, launched in 1901, which was followed by the *Monmouth* type in 1903; the *Devonshire* type in 1905; and the *Minotaur* in 1908. The *Minotaur* had a displacement of 14,600 tons, a speed of 23 knots, and carried 4 guns of 9.2 in., and 10 of 7.5 in. The armoured C. was greatly favoured at the beginning of the present cent. to the prejudice of the battleship, but a reversal of opinion subsequently took place, and later naval



Comic Almanack

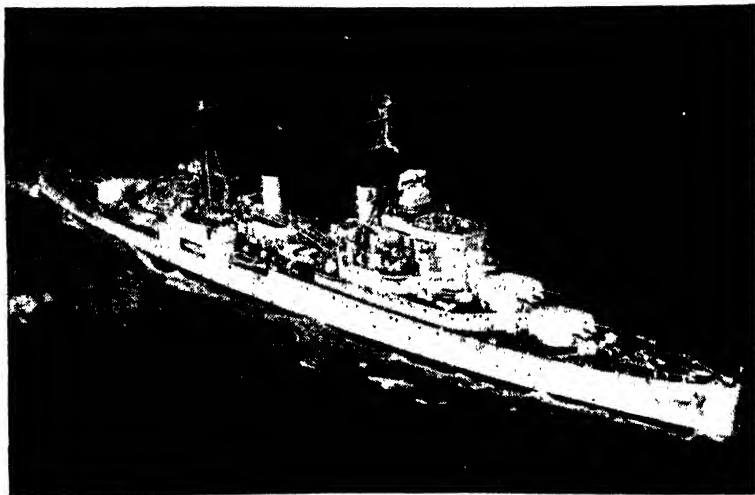
CRUIKSHANK'S CONCEPTION OF ST VALENTINE'S DAY

Cruiser (Dutch *kruiser*, to cross), war vessel primarily built for speed. It existed as early as the 16th cent. and was used for scouting, conveying, and carrying dispatches. At first it was a pinnae of small dimensions, but the operations against the pirates in the 17th cent. caused a bigger class of vessel to be built, provided with oars as well as sails and carrying heavier armament. By the middle of the 18th cent. it had developed into the frigate of 700 tons carrying 28 or 32 guns, and was improved during the naval wars with France until it reached some 1500 tons. The introduction of iron shipbuilding greatly affected the C., as it enabled speed to be developed parallel with strength of armament. The development was, however, slow. At first there was the corvette (q.v. for the modern vessel), with small steaming capacity but high sailing qualities. This was followed by unprotected C.s in which the steaming

opinion favoured the building of bigger battleships of the Dreadnought and super-Dreadnought types. This movement also led to the introduction of a new class known as the battle C., whose armament is only slightly inferior to that of the strongest battleships. To this class belonged ships of the type of the *Invincible*, launched in 1909 (displacement 17,250 tons, speed 27 knots), and the *Queen Mary* (displacement 27,500 tons, speed 28 knots), with 8 guns of 13.5 in. calibre, which was sunk at Jutland. The *Hood* (42,100 tons with 15-in. guns), which was sunk in the Second World War (see 'HOOD,' THE), and *Renown* (32,000 tons with 15-in. guns) were also battle C.s. In the First World War there was always need for a swift vessel carrying heavy armament, such craft being highly suitable for attacking warships of substantial magnitude, while at the same time being able to make wide enveloping

movements for the purpose of operating in the rear of a hostile fleet or threatening its retreat. These were essential functions of the battle C., and an excellent opportunity for the exercise of the battle C.'s powers was afforded in the battle of the Falkland Is. (q.v.), where 2 Brit. battle C.s destroyed Adm. von Spee's Ger. squadron. At the battle of Jutland, however, Brit. and Ger. battle C.s fought each other, and their powers of speed were not used in any exceptional manner. The terms of the Washington Treaty (q.v.) of 1921, however, practically sealed the doom of this type of vessel. The Washington Treaty had for a time a very important influence on the design of all types of war vessels, and in the case of C.s

increasing the total number of C.s to 70, of which 60 would be under age and 10 over age. In the naval programme for 1939 it was proposed, *inter alia*, to build 4 large 6-in. C.s. At present the Brit. Navy has (1956-7) 21 C.s. Those of the *Swiftsure* class (completed 1944-5) are of 9000 tons displacement, have 9 6-in. guns and 10 4-in. anti-aircraft guns, and a speed of 31 knots. Other classes are the 'Colony' class, *Kenya, Jamaica*, etc. (1940-5); they are of 8000 tons, have 9 6-in. guns and 8 4-in. anti-aircraft guns; the *Dido* class (1939-41), 5750 tons, 8 or 10 5.25-in. and 2 to 12 40-mm. anti-aircraft guns. The last two classes have a speed of 33 knots. Then there is the *Southampton* class, named after the big



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H.M.S. 'SUPERB'

a limit of 10,000 tons displacement, with guns up to a maximum of 8 in., was fixed. Now generally the term C. (as distinct from Amer. battle C.s or 'large cruisers') refers (since the Washington limitations) to a light C. of not more than 10,000 tons displacement. C.s are built for speed, their function being to convoy merchant vessels and transports, pursue enemy armed ships and merchant ships, and undertake police duty on Commonwealth trade routes. The R.N. generally names them after Brit. cos., tns, dominions, and colonies. Three Brit. C.s of the *Leander* class, completed in 1934, were intended to become the standard type for large vessels, but subsequent international events made it necessary to increase the displacement. In 1938 the R.N. had 13 'Washington' and 44 other modern C.s. The Gov.'s defence plans, as expressed in the White Paper of 3 Mar. 1936, provided for

cities. They were completed in 1937-9 and vary from 9100 to 10,000 tons and have 9 6-in. guns (*Belfast* has 12) and 8 4-in. anti-aircraft guns. The only remaining 'County' class C. is *Chumberland* (10,000 tons), which fills the role of trials C. and tests all types of new equipment. The 8 *Daring* class ships, all completed since 1952, although not classified as C.s, are as large as the light C.s of earlier days. With their 6 4.4-in. guns, 10 21-in. torpedo tubes, anti-submarine mortars, and close-range weapons, the *Darings* are among the most powerfully armed ships of their size in the world.

Work on the 3 *Tiger* class C.s, which was suspended in 1946, was restarted 10 years later. Amongst other new equipment in these ships will be an automatic 6-in. gun turret, in which the rate of fire per gun will be three times that of the old-type gun. It can be expected that the

R.N. will in due course have C.s equipped to fire guided missiles (*see* GIRDLE NESS).

The Royal Canadian and New Zealand Navies have 2 C.s each. The Indian Navy also has 2 and the Pakistan Navy 1. The U.S.A. has (1956, built or building) a total of 77 C.s, ranging from the *Alaska* class of 27,500 tons to the *Janeau* class anti-aircraft C.s of 6000 tons. The total includes 2 C.s in commission which have been converted to fire guided missiles and more under construction, and one 11,000-ton C. under construction which will be driven by nuclear power. The Fr. Navy has 4 C.s (8000 tons) and 1 anti-aircraft C. of the same tonnage under construction. The U.S.S.R. has, built or building, 22 *Sverdlov* class C.s, each of 12,800 tons nominal and with 12 6-in. and 12 3.9-in. guns. Other C.s include 5 of the *Chaparin* class (11,500 tons) and 7 of the *Kirov* class (8800 tons). *See* G. Holman, *The King's Cruisers*, 1948; and *Jane's Fighting Ships*.

Crummock Water, lake (2½ m. long and ½ m. wide) of Cumberland, England, belonging to the National Trust, to the NW. of Buttermere (q.v.), with which it is connected by a stream. To the SW. is Scale Force (q.v.).

Crusades, or **Wars of the Cross** (Fr. *croisade*). The objects of these religious wars carried on by European nations against Mohammedanism between the 11th and 13th cents. were originally (1) to ensure the safety of pilgrims visiting the Holy Sepulchre, and (2) to set up Christian rule in Palestine. Later on the attacks were directed against Egypt and even Constantinople, and in the 14th cent. the conquests of the Ottoman Turks turned crusading into a defensive movement. Actually the movement was continuous for over 2 cents., hardly a decade passing without one or more expeditions. Only the most successful or the most disastrous of these, however, have taken prominent place in hist. In the 11th cent. affairs stood as follows: The mild rule of the first Moslem conquerors had for cents. allowed a Christian protectorate, first estab. under Charlemagne, to exist in Jerusalem, and Christian pilgrims were allowed to come and go quite freely. But this state of affairs was ended in 1010 by the fanatical caliph, Hakim, who destroyed the sanctuary. The protectorate passed in 1021 to the Gk Church, and in 1071 the Saracens were themselves overcome by a rougher tribe, the Seljukian Turks. Christian pilgrimage became difficult and dangerous, and in 1095 the appeals of Pope Urban II, seconded by the preaching of Peter the Hermit, led to the undertaking of an enterprise which in various forms had already been proposed by more than one pope. The turbulent feudal knights of Europe received a new outlet for their energies. Instead of being restrained by the Church with peaceful admonitions, as in the institution of the Truce of God, their warlike ardour was encouraged, organised, and dedicated to what was proclaimed to be the highest and holiest service. The *Deus vult* of Clermont found its echo in the hearts of

both princes and commoners. In 1095 sev. undisciplined hosts, including those of Walter the Penniless and Peter the Hermit, set out for the E. but perished on the way. In 1096-7 a great army under Godfrey de Bouillon, Bohemund of Otranto, and other leaders, concentrating on Constantinople, fought its way through Asia Minor, taking Antioch in 1098, and Jerusalem in 1099. A Christian kingdom was estab. with Godfrey as its first head, his brother Baldwin as prince of Edessa (Upper Mesopotamia), and Bohemund ruling at Antioch. Godfrey d. in 1100 and was succeeded by Baldwin; Bohemund was captured by the enemy, and a great Fr. expedition sent for the relief of Antioch was almost entirely destroyed. During the next half-cent., in spite of reinforcements, including fleets from Genoa, Norway, and Venice, the Christians in Syria were hard-pressed. To assist in the defence of Jerusalem the orders of Hospitalers of St John and Knights Templars were formed. In 1144 Edessa was lost, and the second crusade, under Louis VII of France and Conrad III of Germany (1146-8), ended disastrously, and its failure for a time discouraged European effort, while Muslim pressure increased on all sides.

Saladin (q.v.), sultan of Egypt, having captured Damascus in 1174 and Aleppo in 1183, now swept down through Galilee with an immense force, defeated the Christians at Tiberias and Hattin, and took Jerusalem, Oct. 1187. The news was received in Europe with consternation and rage. Fresh C. were set on foot, of which the most important was that led by Philip of France, Frederick of Germany, and Richard I of England (1189). The Germans went through Asia Minor, losing their emperor on the way by drowning; the Fr. and Eng. journeyed by sea to Acre, which had already been besieged for nearly 2 years by Guy de Lusignan. Richard distinguished himself in the capture of the city, but quarrelled with his allies, who left him to carry on the war alone. After a year of brilliant but useless exploits, he made a truce with Saladin, and returned to Europe. Another crusade, starting from Venice in 1202, became involved in Venetian and Byzantine intrigues, and instead of reaching Jerusalem assisted the deposed Isaac Angelus to regain the Gk throne: a few months later Constantinople was stormed and sacked by the Crusaders, and a Lat. empire estab. there under Baldwin of Flanders, 1204. In 1212 sev. thousand children were allowed to go on a crusade, many dying on their way from France and Germany to the It. coast. The rest embarked, but those who reached Alexandria were promptly sold into slavery. A crusade under Andrew of Hungary and others (1217-21) against the Moslem power in Egypt was a failure, but that of Frederick II, undertaken in 1228 while he was under the ban of the Church, was successful. By diplomacy, not fighting, he regained Jerusalem and the S. of Palestine, which remained in Christian hands until 1238, when it was

finally lost. The crusade led by Louis IX of France (St Louis) in 1249 was, like that of 1217, directed against Egypt, and proved even more disastrous. Louis, with the greater part of his army, was captured, and had to pay 800,000 pieces of gold as a ransom. Even after this, in 1270, he headed another crusade, but *d.* at Carthage. Among those who joined this expedition was Prince Edward of England (afterwards Edward I), who a few months later led his own followers to Acre, but achieved no results. He was the last royal crusader, except Peter of Cyprus, who in 1365-7 carried on a holy war in Egypt and Syria, but was assassinated. Though later on sev. popes preached united war against the infidels, nothing came of it. Even when Constantinople was captured by Mohammed II in 1453 Pius II failed in trying to raise a crusade for its recovery. The Templars were suppressed, but the Hospitallers, at Rhodes and afterwards at Malta, continued to be a bulwark against Turkish advance in the Mediterranean.

Though the C. failed in effecting the spiritual objects for which they were intended, they benefited Europe indirectly in a number of ways. Trade between Europe and Asia Minor was greatly stimulated; the merchants and mariners of the Mediterranean, especially of Venice and Genoa, found the demand for their shipping increased manifold, both for the transport of armies and for the bringing of new and rare commodities from the E. European craftsmen, and soldiers learned valuable lessons from Saracen skill in art and in war. Sugar, cotton, and many other articles now of everyday use first became known in Europe through the C. In addition, the cultural contacts which the C. maintained (and even fostered) between Europe and the E. had a stimulating effect on the medieval learning of Europe, and to some extent anticipated and paved the way for the Renaissance (q.v.). See T. Archer and C. H. Kingsford, *The Crusades*, 1894; S. Lane-Poole, *Saladin and the Fall of the Kingdom of Jerusalem*, 1898; Villehardouin and De Joinville, *Memoirs of the Crusades* (Everyman's Library), 1908; E. Barker, *The Crusades*, 1923; S. Runciman, *A History of the Crusades* (3 vols.), 1951-4.

Crusca, Accademia della, one of the most famous of the many It. academies, founded at Florence, 1582, by Grazzini, and still in existence. 'Crusca' means the bran which remains after the bolting of flour. The A. d. C. or Furfuraturum aimed at purifying and cultivating It. language and literature. Its arms were a bolter with the motto 'Il più bel fior ne coglie.' Its *Vocabolario degli Accademici della C.* (1st ed. 1612) is still a model for works of the kind. The Fr. Academy was modelled on this one. Eng. residents in Florence who pub. inferior sentimental poetry and prose about 1785 were nicknamed the Della Cruscan school. In England many of their productions appeared in the *World* and the *Oracle*. Popular for a time, their work received its deathblow from the criticisms of

Gifford, in his *Baviad* and *Maeviad*, 1851. The Della Cruscans included Topham, Mrs Plozzi, and James Boswell.

Crusius, Otto (1857-1918), Ger. classical philologist, b. Hanover. Prof. at Tübingen Univ. in 1886, at Heidelberg in 1898, and Munich in 1913. In 1888 he became editor of the *Philologus*. He produced *De Babrii aetate*, 1879 (and ed. the text of Babrius, 1879); *Analecta ad Paroemiographos Graecos*, 1883; an ed. of *Plutarchus de proverbii Alexandrinorum*, 1889-94; *Zur handschriftlichen Überlieferung der Paroemiographen*, 1891. Other works are *Beiträge zur griechischen Mythologie und Religionsgeschichte*, 1886; *Untersuchungen zu den Mimetiden des Herondas*, 1892 (ed. this text and trans. it into German, 1893; new ed., by Herzog, 1926); *Die delphischen Hymnen*, 1894; a 4th ed., enlarging it, of the anthology of Gk lyric poetry compiled by Bergk and Hiller, 1897; and a biography of Erwin Rohde, 1902.

Crustacea (Lat. *crusta*, crust, referring to the incrustation of the external skeleton with lime in the larger species), large and greatly varied class of animals, classed with insects, spiders, and myriapods (centipedes and millipedes) in the phylum Arthropoda. The astonishing variety in common characteristics will be recognised when it is seen that the group includes crabs, crayfish, lobsters, barnacles, acorn-shells, water-fleas, woodlice, pill-bugs, sand-fleas, and shrimps, and is composed of both terrestrial and aquatic animals, the latter being either marine or fresh-water species. The features which are shared by all are few, and in degraded forms some of the chief characteristics are lost. Nearly all breathe by means of gills, the head has 5 pairs of appendages (namely 2 pairs of antennae and 3 pairs of jaws), the thorax bears numerous appendages which are usually biramous, and the segmented abdomen also frequently has limbs. Reproduction is sexual, the sexes being nearly always distinct, and all crustaceans are oviparous; the female carries her eggs with her under the abdomen or thorax until they hatch, when a series of extraordinary metamorphoses generally takes place. The distribution of C. is very wide. They frequent the sea at all depths, occur in fresh-water lakes and rivers, and a few dwell under the bark of trees; the extinct species date from the Cambrian period. They function as scavengers of the sea, are used as bait for fish, and by some people crabs, lobsters, prawns, shrimps, and crayfish are regarded as food. About 23,000 living species have been classified, the grouping being based upon the character and number of the segments and appendages. The Trilobita were formerly classed with the Entomostraca, but are now generally considered as distinct arthropods, and the two sub-classes are known as the Entomostraca and Malacostraca. The Entomostraca contains four orders of small aquatic animals: (1) Branchiopoda (q.v.) or Phyllopus, e.g. the brine-shrimps and water-fleas; (2) Ostracoda, e.g. the genus *Cypris*;

(3) Copepoda, e.g. Cyclops and fish-lice; (4) Cirripedia (barnacles), e.g. the barnacle-goose and acorn-shell. The Malacostraca contains sev. orders of which the chief are the Decapoda, e.g. the crab and lobster; Amphipoda, e.g. the sand-hopper; Isopoda, e.g. the wood-lice; Stomatopoda, e.g. *Squilla*; Cumacea, e.g. *Cuma*.

Crutched, or **Trinity Friars**, order of friars who came to England from the Continent in 1244, called *Fratres cruciferi*, or *croisiers*, from the staff, bearing a cross on the top, which they carried in their hands. This name was in England corrupted into 'Crouched,' or 'Crutched,' F., and is still preserved in Crutched-friars, Mark Lane, E.C. They belonged to the Trinitarians who followed the Augustinian rule. Later they wore a scarlet cross on their habits, changed to a blue cross in 1460 by Pope Pius II. They had monasteries in London (between Old Jewry, Aldgate, and Mark Lane), Oxford, and Reigate, and also in Scotland and Ireland at the Reformation. They were suppressed by Pope Alexander VII in 1656.

Cruveilhier, Jean (1791-1874), Fr. pathologist, b. Limoges. He studied medicine at Paris, graduating in 1816. He was prof. of surgery at Montpellier (1823-5) and Paris (1825-36). In 1836 a new chair of pathological anatomy was created for him at Paris Univ., which he held for 30 years. His best work, *Anatomie Pathologique du Corps Humain*, 1829-42, is a sumptuous atlas with beautiful coloured plates, perhaps the best of its kind ever pub. It includes the first description of disseminated sclerosis (see *SCLEROSIS*). See *Das Leben Jean Cruveilhiers*, 1931.

Crux, see *SOUTHERN CROSS*.

Cruz, St Juan de la, see *JOHN OF THE CROSS*, ST.

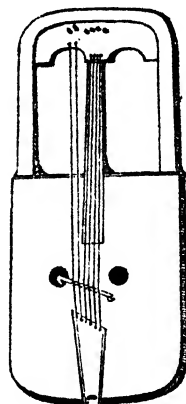
Crwth, or **Crowd**, obsolete lyre-shaped musical instrument with 6 strings, 4 being played with a bow and 2 plucked by the thumb. It is very ancient in origin, probably the oldest stringed instrument played with the bow, mentioned about AD 609 by Venantius Fortunatus, bishop of Poitiers, in some elegiacs as 'chrotta.' The C. trithant had only 3 strings. Bow instruments probably came originally from India, but the C. was apparently the first of the viol family in Europe. It was an especial favourite in Wales, and was heard there as late as 1801. In England, Ireland, and Brittany it was also much played. The sound-holes were circular, the bridge slanted to the right, its left foot passing through the sound-hole and resting on the back of the instrument, thus doing the work of a sound-post. The C. is frequently mentioned in T. Watts-Dunton's romance *Aylwin*, 1898.

Crying Bird, see *COURLAN*.

Cryolite, mineral with a shimmering pearly lustre, found in abundance on the W. coast of Greenland. It is composed mainly of the fluorides of aluminium and sodium (3NaF·AlF₃). It is largely employed in the production of aluminium.

Cryophorus, apparatus invented by Wollaston to demonstrate the loss of

heat due to evaporation. The instrument consists of a bent glass tube provided with a bulb at each end; it is prepared by introducing a small quantity of water, which is boiled until the tube and bulbs contain only water and water vapour, when the apparatus is hermetically closed. Calling the bulbs upper and lower, for convenience, all the water is passed into the lower bulb, the upper bulb being surrounded by melting ice which condenses the vapour as rapidly as it is formed in the lower bulb. The absorption of heat soon cools the water in the lower bulb to freezing point and finally it becomes ice. It should be pointed out that the water in the lower bulb can be a little above the temp. of 0° C. because it is exposed to a pressure less than 1 atmosphere and water freezes above 0° C. under such circumstances.



CRWTH

Crypt (Gk *kryptos*, hidden), subterranean, vaulted structure under a church (especially directly beneath the choir or chancel), used for sepulture, or (rarely) as a chapel. Originally it was a subterranean chapel in the catacombs. C.s, when large enough for an altar and having room to worship the relics, grew out of the confessions or underground tombs designed to receive the bodies of saints, martyrs, and church dignitaries. C.s were most usual between the 9th and 13th cents., but were not common after the Romanesque period. One of the finest examples is that of the cathedral at Glasgow. In England there are good examples under the cathedrals of Canterbury (1096), St Paul's (London), Winchester, Worcester, Hereford, and Gloucester. Others are under Chartres Cathedral; cathedral of Otranto; St Mark's, Venice; St Eutrope, Saintes; and St Peter's, Rome.

Cryptogamae (Gk *kryptos*, hidden, *gamos*, marriage), name given to the 24th class of the Linnaean system of

plants. It is used to distinguish the plants which do not possess perianth, stamens, pistil, or any floral parts like the *Phanerogamæ*. They are mostly reproduced by spores. The C. consists of 3 groups, the Thallophyta, e.g. seaweeds and fungi; the Bryophyta, or mosses and liverworts; the Pteridophyta, e.g. ferns and selaginellas.



THE CRYPT, CANTERBURY CATHEDRAL

Cryptography (from Gk *kryptos*, hidden, secret; *graphein*, to write), or writing in cipher, the art of writing messages in such a way that they can be read only by those possessing the key to the cipher. Plutarch tells of a system in use among the Spartan generals (c. 450 bc), known as the *scytale*, from the staff used to write and to decipher their messages. The writer wrapped a long strip of parchment or a narrow belt round his staff, so that the edges touched all the way round. The message was then written along the joined edges, so that each letter was written half on one side of the join and half on the other. The strip was then unrolled and sent to its destination. It could only be read by rolling it on a staff similar to that used by the sender, so that the letters again became whole. This method, known as the *transposition cipher*, was excellent, combining a system of cipher with a method of concealment; but it was useless once the secret was known, as a suspicious strip of parchment or belt needed only to be tried on different sizes of staff to break the message. Then there is the *substitution cipher*: Julius Caesar (c. 50 bc) made use of such a cipher, by which the 4th letter of the alphabet stood for the 1st, the 5th for the 2nd, and so on. A cipher formed by reversing

the order of the alphabet was in use among the Jews, as we learn from Jeremiah xvi. The Eng. friar Roger Bacon (c. 1214–94) described sev. cipher systems of a fairly elementary nature. His actual knowledge of the subject, however, seems to have been great; indeed, a book ascribed to him is written in a cipher which has never been broken. A *Liber Ziferarum*, written c. 1380 by Gabriele de Lavinda, chief papal cryptographer, gives instructions for the breaking of simple substitution ciphers. Nearly a century later, Cicco Simonetta (1410–80), cryptographer to the duke of Milan, wrote an important manual, *Regule ad Extrahendum Litteras Ziferatas sine Exemplo*. The first comprehensive writer on the subject was John Trithemius (1462–1516), abbot of Spohnheim. At the request of the duke of Bavaria he composed *Polygraphia* (1500). The same prelate may also be the author of *Stenographia*, pub. some 50 years later at Lyons. Giovan-Battista della Porta (1535–1615), a Neapolitan mathematician, pub. in 1568 *De Furtivis Litterarum Notis*, dealing also with a double substitution. More comprehensive is the *Traité des Chiffres*, 1586, by the French Blaise de Vigenère (1523–96). During the period of the Civil war in England (1642–9), most of the important messages from the leaders of both parties were sent in cipher. The Royalists especially made free use of this means. Charles I and his queen were adepts at the art, and a large number of their letters and papers remained untranslated until the 19th cent. Of particular interest is the *Great Cipher* of Louis XIV, which was used in France in the late 17th and early 18th cent. Its author was Antoine de Rossignol, head of the *Chambre Noire* (the Fr. cryptographic dept) from 1627 to 1678. During the 18th cent. the practice of C. regressed steadily, but in the 19th cent. new methods were invented. Adm. Sir Francis Beaufort (1774–1857) devised the Beaufort cipher. Sir Charles Wheatstone (1802–75) devised the Playfair cipher (which during the First World War was generally adopted for military communications). Edgar Allan Poe (1809–49) was a very able cryptanalyst. Interesting are the Kasiski method of cipher-analysis, pub. in 1863 (F. W. Kasiski was a Major of the Russian General Staff), and the Bazeries Ciphering (cylinder invented in 1899 (Étienne Bazeries was head of the Fr. cryptographic bureau). In recent times electric ciphering machines have been introduced.

The various different techniques of C. fall mostly under the following heads: (1) Writing with invisible ink which becomes visible when the paper is heated; (2) the insertion of superfluous words and letters, where it is agreed upon that words at regular intervals form the message, the rest being padding; (3) the misplacing or rearrangement of words or letters; (4) reading vertically or diagonally; (5) the substitution of letters; (6) by stencil plates or papers which are placed over the cryptogram, the words which

then appear forming the message; (7) the use of 2 or more letters (Bacon's system); (8) the employment of numerals instead of letters, a system often used by Charles I; (9) by a special key containing an arbitrary code; (10) the use of specially arranged counterpart tabulations, which vary at different stages in the message. A description of Hogg's secret code will give some idea of a cipher of this latter class. It consists of 2 columns, 1 fixed and containing the letters of the alphabet, another sliding by the side of the first column and containing 2 alphabets, 1 continuing below the other. A key word is agreed on by the correspondents, and this word is repeated again and again until the message be ended. The working may be best explained by an example. Suppose the key-word be *Edna*. The sliding column is then moved so that the *E* on its upper alphabet comes opposite the *A* on the fixed alphabet. Each letter on the sliding alphabet is used as a substitute for its equivalent on the fixed alphabet. With the columns in this position the 1st letter of the message is written down. Then the 1st of the sliding scale is moved opposite the fixed *A* and the 2nd letter written down. Then *N* is moved opposite *A* and the 3rd letter written. The 4th letter does not change. For the 5th letter the *E* scale is again used, and so on. Thus, with the key-word given above, the sentence 'Send help at once' would appear as 'Whad thyp ew bugh.' The first work of the decipherer in cases of this kind is to see the letter which is used most frequently. In Eng., this will correspond to the letter *e*. The letters which are most frequent after *e* are the following: *t, a, o, n, i, r, s, h, d, l, c, w, u, m, f, y, g*, etc. All the single letters must be either *A, O, or I*. The double letters which recur most frequently are *ci, oo, ff, ll, ss*, and the commonest words of 2 letters are, roughly speaking, *of, to, in, it, is, be, he, by, or, as, at, if, etc.* A special study of the subject will discover a great number of symmetrical combinations of letters which occur with greater or less frequency in all languages, and which will materially aid in the work of solving cryptograms. See P. Thiéckesse, *Treatise on the Art of Deciphering and of Writing in Cipher*, 1772; A. Langie, *Cryptography* (trans.), 1922; A. Fagl, *Système des chiffres*, 1926; W. F. Friedman, *The History of Codes and Ciphers*, 1936; L. Sacco, *Manuale di crittografia*, 2nd ed., 1936; R. Badouin, *Éléments de la cryptographie*, 1939; A. d'Agapeyeff, *Codes and Ciphers*, 2nd ed. 1942.

Cryptomeria, small genus of evergreen coniferous trees, family Pinaceae, of which *C. japonica*, Jap. cedar, 120 to 150 ft. of China and Japan, is valued for its fragrant timber; and has many varieties, of which the dwarf forms are esteemed for rock gardens.

Cryptoprocta Ferox, species and genus of Viveridae, or civets, is the fossa of Madagascar and constitutes in itself the family Cryptoproctidae. In appearance

it resembles a large pole-cat, 3 ft in length, and in colour it is reddish-brown. It is active, carnivorous, and when attacked is said to produce a skunk-like smell from its scent glands.

Crystal Palace, the main feature of the Great Exhibition (see EXHIBITION) of 1851, re-erected for popular entertainment at Sydenham and opened by Queen Victoria in 1854. From 1855 to 1901 the famous C. P. Saturday concerts (symphony concerts) were held there under the direction of August Manns. From 1859 to 1912 the Handel festival took place at the C. P. every 3 years. It was destroyed, except for 2 towers, by fire in 1936. To prevent their providing a landmark for enemy aircraft the towers were pulled down in the Second World War. See also ALEXANDRA PARK; SYDENHAM.

Crystalline Rocks, a geological term for rocks with a coarsely crystalline structure. As usually employed the term describes 2 groups of rocks: the coarsely crystalline intrusive igneous rocks, such as granite; and the coarsely recrystallised metamorphic rocks, which represent sediments and igneous rocks altered by increased temp., pressure, and the action of circulating solutions at depth in the earth. The formation of the C. R. within the earth contrasts with the breakdown of rocks due to weathering at the surface of the earth. The latter process forms new sediments, whereas the former gives new metamorphic and igneous rocks. Strictly speaking the evaporites, the rocks such as salt and gypsum beds, formed by evaporation of sea-water can be classed as C. R., but in practice the term is rarely applied to them.

Crystallisation, see CRYSTALLOGRAPHY.

Crystallites, stages in the formation of crystals which occur in volcanic rocks. When examined under the microscope, these rocks consist largely of a glassy base, and through this base are scattered great numbers of tiny crystals and C. C. may be produced by allowing a solution of sulphur in carbon disulphide, mixed with Canada balsam, to evaporate slowly, and the development of the C. can then be noted on a microscope slide.

Crystallography (Gk. *krystallos*, ice; *graphein*, to write), the study of the form, structure, and properties of crystals. When matter passes into the solid state from the liquid or the gaseous state, it may take an amorphous (shapeless), or a crystalline form, when there is a remarkable similarity between crystals of the same substance. The formation of crystals appear to be favoured by a gradual transition from the fluid to the solid state, as when a substance in solution is deposited by the gradual cooling or evaporation of the liquid or when the transition occurs directly from the gaseous to the solid state. The molecules then tend to arrange themselves so as to form polyhedra, and this tendency is encouraged by the presence of a crystal of the same, or of a similar, substance. Most organic and inorganic substances can be obtained in a crystalline form: sugar, salt, and alum readily crystallise from solution; metals

such as cast iron and zinc solidify from fusion in a crystalline form; but the most perfect examples are those resulting from the gradual cooling of the earth's crust. The science of C. deals mainly with minerals thus crystallised, and may therefore be regarded as a sub-div. of the science of mineralogy. When the object of study is the form of crystals, it is known as *Morphological* or *Geometrical* C.; the structure and properties are studied under the name of *Physical* C.

There are 3 principles which characterise the crystalline form; they are indicated by the terms constancy of angles, symmetry, and nationality. Although there may be irregularities and imperfections of form in crystals of the same substance the angles between their faces are invariably the same. The symmetry of crystals is not necessarily one of position, but is one of direction; that is, the edges and faces may be arranged so as to give the same direction with respect to certain axes or planes without correspondence in linear dimensions. A cube is symmetrical about its central points; that is, its faces are arranged in parallel pairs about that point. It is also symmetrical about certain axes: the lines joining opposite corners (4 axes); those joining the middle points of diagonally opposite edges (6 axes); and those joining the middle points of opposite faces (3 axes), giving a total of 13 axes. A cube may also be divided into 2 symmetrical halves by certain planes: those passing through 4 corners (6 planes), and those passing through the middle points of 4 edges (3 planes); giving a total of 9 planes. A cube therefore is symmetrical with respect to 23 elements altogether. Other crystalline forms display fewer types of symmetry. The principle of rationality depends on certain systems of notation by which the directions of the faces are indicated. Suppose 3 edges formed by the intersection of 3 faces be taken as axes of reference. Any face can now be defined by the intercepts cut off by it on these 3 axes. As the direction, but not the dimensions, of the face is required, the ratio of these intercepts is sufficient for the purpose. It has been found empirically that these ratios are simple numbers, as 1 1 2, 2 3 1, etc., and they can never involve incommensurable surds as $\sqrt{2}$ or $\sqrt{5}$. The system of notation indicated is known as Weiss's, but it has been to a great extent superseded by Miller's, in which the reciprocals of Weiss's figures are used. Thus the Weissian index (231) becomes, according to Miller, $\frac{1}{2} \frac{1}{3} 1$, or 3 2 6.

Systems.—According to the number and nature of the axes of symmetry, crystals may be divided into 6 groups or systems: (1) Cubic or isometric system, where the 3 crystallographic axes of reference are at right angles to each other and are equal in length. (2) Tetragonal or pyramidal system, where the 3 axes are all at right angles to each other, but only 2 are equal. (3) Rhombic, orthorhombic or prismatic system, where the axes are all at right angles, but are of different lengths.

(4) Oblique or monoclinic system, where 2 of the axes are at right angles and the 3rd oblique, all the axes being of different lengths. (5) Anorthic or triclinic system, where the angles between the axes are all oblique and the axes of different lengths. (6) Hexagonal system, where there is 1 prin. axis of symmetry, and 6 axes of symmetry at right angles to it. Where all the planes or faces required by the complete symmetry of the system are present, the form is said to be holohedral. Sometimes only half of the full number of faces are present; the form is then said to be hemihedral, and when only a quarter are present the form is called tetrahedral.

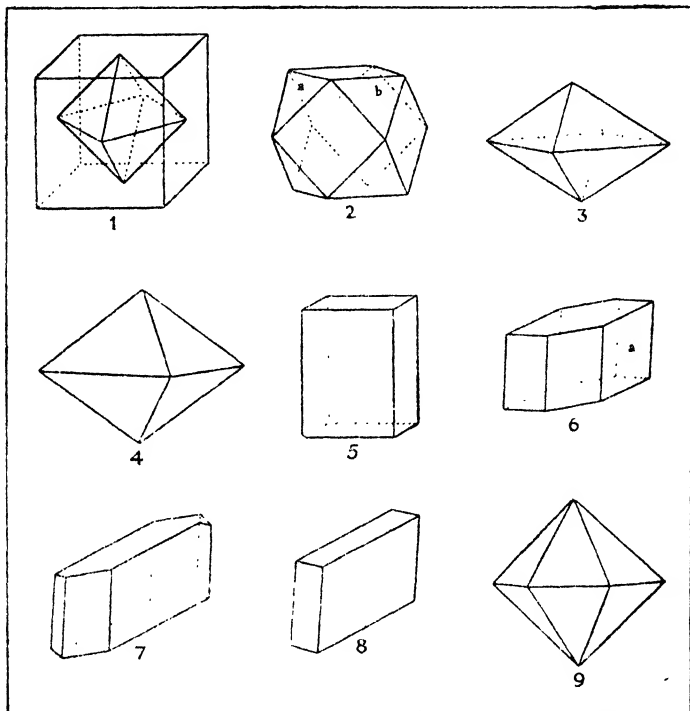
Crystals corresponding exactly to the types as set down in the systems are comparatively rare, imperfect or multiple development rendering it often necessary to assume the existence of faces which cannot be observed. Where a prism is terminated by pyramids, it often happens that 1 end only is complete, the other forming the surface of attachment to the rock. Occasionally *hemimorphism* is met with; this is a condition in which the ends belong to different forms. Crystals are often massed together to form a group. *Parallelism* then occurs, in which 2 crystals are compounded so that a line joining their centres lies along a crystallographic axis or is parallel to it. Alum commonly shows this phenomenon. In *twin-grouping* 2 crystals have a common face. If the crystals be regarded as penetrable, and the faces in contact are looked upon as moved parallel to themselves each through the other crystal, a form is obtained which is known as a penetration twin. There may be 3 or even more individuals in such a group, when their identification by form may become somewhat difficult. Many other irregularities occur, such as are commonly produced in the laboratory when a fairly regular individual is introduced into a solution to promote the deposition of the solid. Certain faces are developed at the expense of others, producing a distorted condition. When imperfections are so numerous as to disguise the crystalline structure of a mineral completely, it is said to be *massive*.

Physical Crystallography.—There are certain physical properties characteristic of the crystalline form. By *cleavage* is meant the tendency of a crystal to split along certain planes when subjected to a wedging force. These planes are always parallel to a face or a possible face of the crystal. When a crystal is broken to pieces by a crushing blow, the fragments usually are bounded by a few planes only, showing the tendency to break in particular directions. When a crystal is struck by a sharp point, percussion lines are produced which agree in number and direction with the symmetry of the face. A crystal immersed in a solvent is acted upon in a manner which shows differing degrees of resistance according to the symmetrical arrangement of the particles. Etched figures are produced which beautifully illustrate the simple form of

the particular crystals. The hardness of a crystal face depends on its direction.

The optical characteristics of various crystals are often used as an aid to identification. They may be classified primarily as opaque, translucent, and transparent. Opaque crystals do not allow light through at all, translucent crystals allow light to pass without allowing definite outlines to be seen, just an oiled paper and ground glass act. Transparent crystals allow

ray. Crystals which possess 1 such axis are called *uniaxial*; to this class belong hexagonal and tetragonal crystals. Those with 2 optic axes are known as *biaxial*; such are rhombic, oblique, and triclinic crystals. The colour of crystals may be due to their own inherent absorptive qualities, when they are known as *idiochromatic*; or may be due to adventitious substances, when they are called *allochromatic* crystals. The behaviour of crystals



Cubic System: 1. Relation of Cube to Octahedron; 2. Cubic Octahedron. *Tetragonal System:* 3. Square Octahedron (obtuse). *Rhombic System:* 4. Rhombic Octahedron (obtuse); 5. Rectangular Prism. *Monoclinic System:* 6. Prism in which 2 edges are truncated by the face and producing an oblique 6-sided prism. *Triclinic System:* 7 and 8. Oblique Rhomboidal prisms. *Hexagonal System:* 9. Double 6-sided pyramid.

light to pass through, but the direction of the ray is bent or refracted. Crystals of the cubic system are isotropic, that is, they refract singly. Other crystals are doubly refracting, the ray being split into 2. This property is best illustrated in calcite, or Iceland spar. It is found, however, that the difference in direction of the transmitted rays varies according to its direction with respect to an optic axis. When the ray travels parallel to an optic axis, it is transmitted as a single

with respect to heat corresponds to their optic properties; the conductivity is greatest along the optic axes. Expansion by heat also varies in different directions, producing change of form.

Substances identical in chemical composition may crystallise in 2 different forms, see DIMORPHISM. An example of trimorphism is *Silica* crystallised in the hexagonal (tetartohedral) system as quartz, in the hexagonal (holohedral) system as tridymite, and in the rhombic

system as *asmanite*. Minerals of analogous constitution often have similar crystalline forms. Such a condition is termed isomorphism, q.v. See A. E. H. Tutton, *Crystallography and Practical Crystal Measurement*, 1922, and *Natural History of Crystals*, 1924; A. Joffé, *The Physics of Crystals*, 1928; D. B. Briggs, *The Study of Crystals*, 1930; and A. W. Wooster, *A Text Book on Crystal Physics*, 1938.

Crystallomancy (Gk *krustallos*, crystal; *manieia*, prophecy, divination), means of divination by gazing fixedly into a crystal, mirror, or pool of ink. This practice has been followed in all ages as a means of foretelling the future. A beryl was most often used. The operator, having muttered certain formulas over it, handed it to a pure youth or maiden, who was then supposed to be able to reveal the future. The desired knowledge was obtained by means of written characters on the crystal, or by the appearance there of the spirits invoked. Dr Dee was a noted adept at C. 2 of his 'magic mirrors' being now in the Brit. Museum. See Shorthouse, *John Ingleseant*, 1881; books on crystal-gazing by Melville, 1903, and Thomas, 1905.

Crystals, Etching of, see ETCHING.

Csába, see BÉKÉSCSABA.

Csárdas (Hungarian *csárda*, tavern), Hungarian national dance, consisting of 2 movements, *andante* and *allegro*, in 3 or 4 time throughout. The 2 parts are called the *lassu* and the *friss*, the former being mostly in the minor mode, the latter in the major. Any number of couples may dance it, all doing different steps and figures.

Csepel: 1. Is. of Hungary, enclosed by 2 arms of the Danube (q.v.), just S. of Budapest (q.v.). It is 30 m. long, and is a rich market-gardening dist.

2. Industrial suburb of Budapest, at the N. end of C. is. It is a busy riv. port, has engineering industries (machine-tools, motor-cycles, bicycles, sewing-machines) and an oil refinery, and manufs. paper and felt. Pop. 20,000.

Csokonai (Csokonay) Vitéz, Mihály (1773-1805), Hungarian poet and prof. at Debrecen. He was above all a lyricist, and inspired by the Hungarian folk-songs he helped to develop the national poetry. Among his most popular works may be mentioned *Magyar-Musa*, 1796; *Ananyt-lás*, 1803; *Dorottya*, 1804 (similar in style to Pope's *Rape of the Lock*); *Andkeoni Dalok*; *A Pásztor Király*, 1806. His collected works first appeared in 1844-7.

Csoma de Kőrös, Alexander (Sandor) (c. 1798-1842), Hungarian traveller and orientalist, educ. at Nagy-Enyed College, then at Göttingen. His life-long ambition was to discover the real origin of his race—the Magyars—supposed to have come from Asia, but he d. leaving the problem unsolved in spite of all his efforts. While journeying to Tibet and China to continue his researches, he d. at Darjeeling. See life by T. Duka, 1885.

Csongrád, mrkt in Hungary, in C. co., on the Tisza (q.v.), 24 m. NNW. of Hódmezővásárhely (q.v.). It has flour and brick industries. Pop. 26,000.

Csongrád County, see HÓDMEZŐVÁSÁRHELY.

C.S.R., see CZECHOSLOVAKIA.

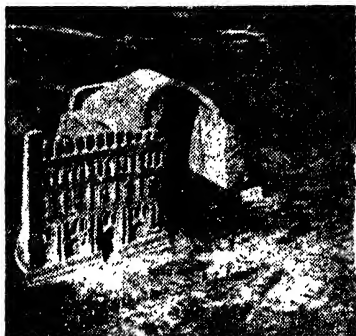
Ctenophora (Gk *kteis*, comb; *phoros*, bearing), large div. of the Coelenterata (q.v.) which consists of free-swimming marine animals, gelatinous in structure, and usually phosphorescent. *Cestus veneris*, Venus's girdle, is a beautiful example.

Ctesias (fl. c. 400 BC), Gk physician and historian, native of Chidus, Asia Minor. He accompanied the expedition of the younger Cyrus against Artaxerxes, and was captured by the Persians at the battle of Cunaxa, 415. For about 17 years he then remained as physician at the court of Artaxerxes Mnemon. A contemporary of Herodotus, his jealous mind is revealed in his attempt to depreciate that historian's work. Fragments of his *History of Persia*, in 21 books, and *Treatise on India* are extant, and there are abridgements of each by Photius. He is more important as a source of remembrance than as a serious historian. Fragments of his works have been ed. by C. Müller (appendix to C. Dindorf, *Herodotus*, 1844). See J. Mahaffy, *History of Greek Literature*, 1895.

Ctesibius (c. 150 BC), Gk physicist of Alexandria, famous for various mechanical inventions, such as the force-pump, hydraulic organ, and other machines. C. was first to discover the elastic force of air and to apply it as a motive power. Hero of Alexandria was his pupil and helper.

Ctesiphon (Gk *Ktésiphōn*), anct city of Mesopotamia, on R. Tigris, 20 m. SE. of Bagdad, materials for which city were supplied by its ruins. Mentioned by Polybius (v. 45) and Ammianus (xxiii. 6), it rose to importance under the Parthian, and later Persian, empire. Strabo describes it as the winter residence of the Parthian kings, and Tacitus (*Ann.* vi. 12) calls it 'redes imperii.' The modern equivalent is Tak-i-Kesra, while the ruins of anct C. and of Seleucia (on opposite bank) are together called Al Madain (the two cities) by the Arabs. It was captured by various Rom. emperors between AD 116 and 362. In the 4th cent. C. was the cap. of the Sassanian dynasty. Yazdgerd surrendered it to the conquering Arabs, 637. The facade and arched hall or throne-room of a marvellous palace, said to have been built by Chosroes I., are included in the ruins left. During the First World War an important battle was fought here between the Turks and the Brit. In the summer of 1915 Gen. Sir Charles Townshend advanced up the R. Tigris, capturing Amara and Kut-el-Amara. Pushing on from here with an inadequate force he advanced towards C. and on 21 Nov. drove the Turks from a strong position at Laji and then prepared for an assault on their position at C. itself. He attacked on the night of 22 Nov.; but, though he met with some initial success, the Turkish reinforcements were so overwhelmingly strong that Townshend was compelled to withdraw to Kut-el-Amara, where he eventually surrendered. See

S. W. G. Benjamin, *Persia and the Persians*, 1887; and O. Reuter, *Die Ausgrabungen der deutschen Ktesiphons-Expedition im Winter 1928-9* (with bibliography), 1930.



U.N.A.

THE PALACE OF KTESIPHON

The parabolic vaulting has a span of 86 ft. On the left is the façade of the east wing of the palace.

Cuanhuahuac, *see* GUERNAVACA.

Cuba, largest is. of the W. Indies, an independent rep., at the mouth of the gulf of Mexico, 130 m. from Florida, separated from it by Florida Strait. Lies between 74° and 58° W. long., and 19° and 23° N. lat. Separated from Haiti on the E. by Windward Passage, from Jamaica on the S. by the Caribbean Sea, from Yucatan (Mexico) on the W. by Yucatan Channel. Length from Cape Maisí (E.) to Cape San Antonio (W.) 730 m.; breadth 20-90 m.; area (with Is. of Pines and many others) 44,218 sq. m. The coast-line is mostly abrupt and steep; a large marshy depression (*trocha*), 45 m. wide, connecting Morón and the S. coast, divides C. into two distinct parts, E. and W. There is a series of terraces on the E. The coasts are very dangerous owing to reefs and shallows extending nearly 24 m. out to sea, but there are many good harbours and bays, as at Havana (cap.). Guantánamo, Santiago de Cuba, Manzanillo, Bahía de Jagua, Cabañas, Padre, Nuevitás, and Matanzas. The prin. ranges are the Sierra Maestra (culminating in Pico Turquino or Monte Azul, about 6600 ft), the Sierra de los Organos (Pico de Guajabon, about 2000 ft), and the Sierra de Trinidad. The rivs. are not very large, the chief being the R. Cauto, flowing into Manzanillo bight; others are R. Saza, draining the swamps (*ciénegas*) to the N. of the Zapata peninsula, and Sagua la Grande. The climate is tropical, average temp. 77°, rarely falling as low as 50°. Chief rainy season, May to Oct. Earthquakes are more frequent in the E. than in the W. The numerous forests contain mahogany, ebony, cedar, fustic

wood, besides yielding dye-woods, fibres, gums, and resins. Flowers and shrubs also abound, including the royal palm. Bats, agoutis, and the solenodon are the only indigenous mammals. Birds are very numerous. The crocodile and caiman are found in the marshes. Other reptiles are the boa and iguana. C. is famous for scenic beauty, the Yumuri valley being one of the most lovely dists. of the is.

The chief products are sugar (over half the cultivated area being planted with sugar-canes, especially in Santa Clara and Matanzas, which supply one-quarter of the world's crop), and aromatic tobacco in Pinar del Río, particularly in the dist. of Vuelta de Abajo, the finest being produced on the banks of the San Sebastian, and made into the famous Havana cigars. Coffee-planting is now of minor importance, and none of the crop is exported. Henequén fibre, however, represents one-eighth of world output. Other products are Indian corn, maize, rice, cacao, indigo, potatoes. There are many fruits (oranges, bananas, lemons, shaddockes, figs, etc.) and vegetables; mallochia grass and cassava are grown largely for the U.S. markets; cattle and poultry breeding are carried on, and wax and honey produced. Over 1,000,000 tons of sugar were produced in 1909, largely exported to the U.S.A., while in 1953-4 exports alone reached 5.4 million tons. In the same year the tobacco crop was 90,000,000 lb., coffee 435,000 bags (each 132 lb.). In 1954 the U.S.A. sent 75 per cent of imports and received over 68 per cent of the exports. Exports are mainly sugar, hemp, molasses, and tobacco; imports food, beverages, textiles, and machinery. Values in 1954 were: imports, £175,000,000; exports, £193,000,000.

Iron-ore is mined by Amer. companies near Santiago and Juragua. There are also manganese deposits, still some copper in the Sierra del Cobre, asphaltum in the bay of Cárdenas, and salt. Gold and silver are exported in small quantities. There are 6000 m. of railway, admirably managed (public services 3000 m., private lines on plantations and in mining areas, 3000 m.). There are about 2040 m. of roads. Automobiles are much used, and electric street cars run in most tns. Hotels are generally good. There is no colour bar. Spanish is the language of the is., but Eng. is widely understood. There is not a State Church. Education is free and compulsory. In 1861 only 19 per cent of the pop. could read and write, in 1925 85 per cent; but the percentage of illiterates rose in 1945 to 35.6. In 1950 only half the children of elementary school age were actually attending the 6250 schools provided. There are 21 gov. secondary schools, plus a commercial school and a normal school in each of the 6 provs. The Havana Univ. was founded in 1721, but until its enlargement under Amer. auspices in the first quarter of this century no broad advance was made in secondary or higher education. Cock-fighting is a popular national sport. Bull-fights were abolished in 1899. In

1922 the first broadcasting station in Lat. America was installed at Havana. Chinese coolies and Negroes are much employed for labour. Chief tns: Havana (cap.), Holguin, Camagüey, Santa Clara, Santiago de Cuba, Sancti Spiritus, Cienfuegos, Guantánamo, Bayamo, Manzanillo, Ciego de Avila, Pinar del Río, and Matanzas; the 6 provs. are Havana, Oriente, Santa Clara, Camagüey, Matanzas, and Pinar del Río.

History. C. was discovered by Columbus during his first voyage, in Oct. 1492; he saw sev. of the natives going about with fire-brands in their hands, and certain dried herbs, which they rolled up in a leaf and, lighting one end, put the other in their mouths, puffing out the smoke. A roll of this kind they called a *tabaco*. C. was colonised by Spaniards about 1511, Negroes replacing the Indians as slaves early in the same century; it was a Spanish possession till 1898. (The is. was actually under Brit. rule for one year, 1762-3, when it was returned to Spain in exchange for Florida.) In the 17th cent. C. was harassed by raids of Eng., Fr., and Dutch, who built the primitive fortifications of Havana and Matanzas as defences. The slave trade was abolished early in the 19th cent., and in 1880 the Sp. Cortes passed an Act to abolish slavery. The slaves were emancipated between 1880 and 1886. During 1868-78 there was war against the Spaniards for Cuban independence. The separatist and autonomous movement culminated (1895) in rebellion, and although the Madrid Gov. showed a conciliatory spirit the agitation was continued. In 1898, during this second war for independence, the U.S. Gov. carried out their threat of intervention by sending the battleship *Maine* to Havana. On 15 Feb. of that year the *Maine* was blown up in Havana harbour; war with Spain followed. C. was under Amer. military control, 1899-1902. New educational measures were enforced, 1900. In 1901 a republican form of gov. was estab., the first president being Estrada Palma. The 'Platt Amendment' contained guarantees against foreign interference. In 1903 a commercial convention was signed between C. and the U.S.A. In 1906 a rebellion against the president was quelled by the U.S.A. Mr Taft, U.S. secretary of war, was sent by President Theodore Roosevelt as mediator and became provisional governor, being succeeded by Magoon. Amer. troops were finally withdrawn on 1 April 1909, and henceforth affairs ran more smoothly. Apart from the sugar boom during the First World War, the country has depended largely on U.S. investments. Revolutions (1917, 1924, 1931) continued. In 1933 a revolution was followed by provisional gov. until May 1936, when a constitutional gov. was elected. Following the Socialist-Democratic victory at the general election of 1940 Col. Batista assumed the presidency (July); a new constitution had been adopted in June. According to this constitution the Cabinet is responsible to Congress; if it receives a

vote of no confidence, the Cabinet must resign in 48 hrs. C. declared war on the Axis (q.v.) on 11 Dec. 1941. The president for 1944-8 was Ramón Gran San Martín; but Batista is now again dictator-president. The pop. is 5,800,000 (census 1953), of whom many are of mixed parentage.

See W. J. Clark, *Cuba and the Fight for Freedom*, 1896; I. E. Canini, *Four Centuries of Spanish Rule in Cuba*, 1898; J. B. Atkins, *The War in Cuba*, 1899; J. H. Leslie, *Official History of the Spanish-American War*, Washington, 1899; A. G. Robinson, *Cuba and the Intervention*, 1905; L. A. Wright, *The Early History of Cuba, 1492-1536*, 1917; C. E. Chapman, *A History of the Cuban Republic: a Study in Hispanic American Politics*, 1927; L. H. Jenks, *Our Cuban Colony*, 1928; H. F. Guggenheim, *The United States and Cuba: a Study in International Relations*, 1934; H. Strode, *The Pageant of Cuba*, 1935; R. H. Fitzgibbon, *Cuba and the United States, 1500-35*, 1935; R. G. Sánchez, *Manual de Historia de Cuba*, 1938; H. E. Friedländer, *Historia Económica de Cuba*, 1944; and International Bank, *Report on Cuba*, 1951.

Cubango, Okavango, or Kubango, riv. of W. Africa, about 1000 m. long, rising near the Quanza's sources. E. of Benguela, forming part of the boundary between SW. Africa and the Portuguese Angola. It flows in a SE. direction, and into Lake Ngami, under the name Tloge or Tonke (Taukhe).

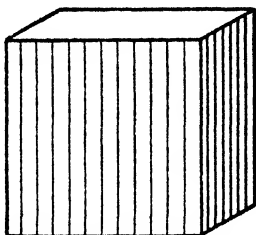
Cubature, process of finding the volume of a solid. The word is parallel to quadrature, which means resolving an area into a number of squares, while C. means resolving a volume into a number of cubes. To find the value of a volume from particular data is an arithmetical problem in the case of parallelepipeds and is usually dealt with under the name of *mensuration* (q.v.). Where figures are bounded by curves the process is usually analytical, and is based on the theorems of Pappus of Alexandria, which state: (1) If any plane curve revolve about any external axis which lies in its plane, the volume of the solid generated is equal to the product of the area of the revolving curve and the length of the path described by the centroid of the revolving area. (2) In the same circumstances the area of the solid thus generated is equal to the product of the perimeter of the revolving curve and the length of the path described by the centroid of the curve.

Cube, regular solid bounded by 6 square plane faces, opposite sides being parallel, in such a way that 3 edges always meet at right angles to each other. In arithmetic the C. of a number is found by multiplying it by itself 3 times; thus the C. of 2 = $2 \times 2 \times 2 = 8$. Similarly the C. root of any number is that number which multiplied by itself 3 times gives the original number; thus the C. root of 64 is 4. The volume of a C. is measured by the C. of the length of a side; thus the volume of a C. with sides 2 in. long is 8 cubic in.

Cubebæ, berries of *Piper cubeba* and *P. guineense*, family Piperaceæ. Picked unripe and dried for medicinal use in cases

of urinary and bronchial diseases. C. yield the oily compound cubebene and a resinous compound, cubic acid.

Cubic Measure, see METROLOGY.



CUBE

Cubism. This term, applied to a school of art arising from Post-Impressionism, is said to have been first used by Henri Matisse in 1908 in reference to a picture by Braque: 'Encore des cubes! assez de cubisme!' But scorn and derision could not kill the movement, and three years later exhibitions of Cubist art were held in Paris and Brussels, with a wide-spreading effect on painters in many lands. The actual founder of C. was the Sp. artist Pablo Picasso (b. 1881), follower of Paul Cézanne, the great Fr. Post-Impressionist, and Georges Braque was a close runner-up of Picasso. Cézanne had formulated the theory that 'everything in nature is modelled on the sphere, the cone, and the cylinder; one must first understand how to paint these simple figures, and one can then paint anything.' The discovery of comparable essentials of form in negro and primitive art (c. 1907-8) had a reinforcing influence. The Cubist makes no attempt to give an exact reproduction of any objects visualised, but seeks to interpret in his own way the structure underlying surface appearance. C. as a rigid theory did not long outlast the First World War, but its repercussions have been great. It led to the abstract art practised to-day, as well as to the 'style mécanique' and interest in machine forms of Leger and the Futurists. Some of its chief exponents are Fernand Leger, Albert Gleizes, Jean Metzinger, Francis Picabia, Juan Gris, and the Russian sculptor Archipenko. See also PAINTING. See G. Apollinaire, *Les Peintres Cubistes*, 1913; A. J. Eddy, *Cubists and Post-Impressionism*, 1915; A. Gleizes, *Du Cubisme*, 1920; F. Rutter, *Evolution in Modern Art*, 1926; R. H. Wilemski, *Modern Movement in Art*, 1927; and C. Giedion-Welcker, *Moderne Plastik*, 1937.

Cubit (Lat. *cubitum*, elbow), primitive linear measure employed by the ancients, equal to the length of the arm from the elbow to the tip of the middle finger. There is much discussion as to the exact length of the Heb. C., now generally fixed at 17 to 18 Eng. in. or 45·72 cm. The Rom. C. was about 17½ in., and the Egyptian C. ('C. of Memphis') about 20·7 in.

Cubitt, Sir William (1785-1861), civil engineer of Norfolk. He was known as an inventor of machines, such as self-regulating sails for windmills, and the treadmill (1818, soon introduced into the jails of Great Britain). C. came to London, 1826, becoming engineer of the SE. railway. He constructed the canal at Oxford, docks at Bute, Cardiff, and Liverpool, the Berlin waterworks, and various bridges. He also superintended the erection of the Crystal Palace in Hyde Park, 1851, and was knighted for this service.

Cuchullin, Cuchulinn, or Cuchulainn, name of the chief warrior and hero in the Conchobar-Cuchulinn heroic cycle of Ireland. He is usually styled son of Sualdam, an Ulster warrior, but seems to stand in a special relation to the god Lug. C.'s earliest name was Setonta, and he was brought up at Dun Imbrith (Louth). At the age of 6 he went to the court of Conchobar, king of Ulster. He slew the hound or watch-dog of Culann the smith, becoming for a time guardian of his domain instead, hence his name Culann's hound (Cú-ch'ullinn). Later the warrior slew the 3 sons of Necht, hereditary foes of the Ulstermen. At the age of 17 he defended the Ulster frontier against the forces of Medb of Connaught. He was killed some 10 years later by Lugaid and the children of Calatin Dána. Some place the date about the beginning of the Christian era. See Eleanor Hull, *The Cuchullin Saga in Irish Literature*, 1898; and A. Nutt, *Cuchulainn, the Irish Achilles*, 1900.

Cuckfield, small tn of Sussex, England, 12 m. NW. of Lewes. In medieval times C. was a market tn; it has a fine church, largely Early English, and some interesting 16th and 17th century houses. Pop. of urb. dist. (which comprises Cuckfield, Haywards Heath, and Lindfield) 17,010; of par. 24,371.

Cuckoo, member of the family Cuculidae, containing nearly 200 species. The name



CUCKOO

is derived from the note of the common European C. (*Cuculus canorus*), which

appears in England in the spring, migrating again to warmer climes as early as Aug. Most species are remarkable for their parasitic habits. There is no permanent attachment of male to female, and no nest is built. When the female has laid an egg on the ground she takes it in her bill and puts it in the nest of some other bird; or the egg may be directly laid in the nest. The egg is then hatched, and the young bird is fed, by the owner of the nest. When the young *C.* attains sufficient strength (and it early does this) it expels its foster-mother's young from the nest by working itself under them and jerking them out. The yellow-billed *C.* (*Coccyzus americanus*) incubates its own eggs.

Cuckoo Flower, see CARDAMINE.

Cuckoo-spit, or Frog-hopper. *Cercopidae*, ranked under the homopterous sub-order of the Hemiptera (bugs). The name frog-hopper refers partly to the form of their body, partly to their great powers of leaping. The common frog-hopper is *Aphrophora spumaria*; another species frequently met with in gardens is *A. bifasciata*. The larva of these insects, which, except in the lack of wings, resembles the perfect insect in most respects, envelops itself in a froth resembling human spittle. This is often observed on plants.

Cuculidae, family of the order of birds Cuculiformes. It includes the cuckoos (q.v.) and their kin. They are found in greatest variety in the Indian regions. (Cuculinae is Swainson's name for the sub-family of the *C.* which comprises the true cuckoos. The voice of the female is a mere clattering, and it is the male which utters the familiar call-note in the breeding season.)

Cucumber, or *Cucumis sativus*, species of Cucurbitaceae, which is largely cultivated. It is a kind of trailing ann., and the unripe fruit is used for salads and pickles. The finest specimens are obtained from shaded plants growing in a warm, damp atmosphere, and therefore developing rapidly. When fine and long fruit are desired, the plant should not be allowed to bear early, and the female blossoms should be destroyed until the plant has become vigorous and well rooted in the bed.

Cucumis, genus of Cucurbitaceae, is indigenous to the tropics and to sub-tropical lands. In this genus the stamens are free and the tendrils are believed definitely to be modified leaves. *C. melo*, the melon (q.v.), is a valuable plant of which the native country is unknown, and with *C. sativus*, the cucumber (q.v.), has been in cultivation for centuries. Tartary is sometimes assigned to the cucumber as its home.

Cucurbita, family Cucurbitaceae; genus of trailing annuals, natives of warm regions of Africa, America and Asia. Leaves are large, lobed; flowers monoecious, and fruits large. *C. pepo* is the vegetable marrow; *C. maxima*, the pumpkin; and *C. moschata*, the squash of America.

Cucurbitaceae, widespread family of dicotyledonous plants, most of which are of a trailing or climbing habit. Many of

the species are useful or remarkable, for the order comprehends such plants as the melon, gourd, cucumber, colocynth, and bryonia. The fruit is generally fleshy, and is often very large; the melon is typical, with a berry-like fruit called a *pepo*; the seeds are exalbuminous. Some of the prin. genera are *Cucurbita*, *Cucumis*, *Lagenaria*, *Luffa*, and *Bryonia*.

Cúcuta, or San José de Cúcuta, city and cap. of Norte de Santander dept. Colombia. 10 m. from the Venezuelan frontier. The tn was largely destroyed by an earthquake, 1875. *C.* is a riv. port and trading centre, coffee, tobacco, and cattle being prin. products. Coffee and hides are sent by road to Maracaibo for export. Pop. 95,150.

Cud, sodden bolus of hastily swallowed fodder which ruminants drive back from the paunch into the mouth to be leisurely chewed, when semi-fluid is formed which repasses into the stomach.

Cuddalore, Madras State, India, 15 m. from Pondicherry on the Coromandel coast. It is the site of Fort St David, founded by the Brit. in 1690, and was the scene of considerable fighting between the Brit. and Fr.

Cuddesdon, vil. and par. of Oxon., England, 6 m. from Oxford. The palace of the bishops of Oxford is here, and an Anglican theological college.

Cudworth, Ralph (1617-88), philosopher and clergyman, son of a chaplain of James I. b. at Aller in Somersetshire. He graduated at Cambridge, becoming fellow and tutor of Emmanuel College in 1639. In 1642 he pub. *Discourse Concerning the True Nature of the Lord's Supper* and *The Union of Christ and the Church shadowed or in a Shadow*, the first causing much controversy long after his death. In 1645 he was appointed master of Clare Hall, and in the same year regius prof. of Heb. *C.* was at one time rector of N. Cadbury, Somersetshire (1650). In 1654 *C.* was elected master of Christ's College; in 1678 he became prebendary of Gloucester. His chief work, *The True Intellectual System of the Universe*, also appeared in 1678. It displays great learning, liberality, and independence of mind. This famous work attempted to confute all the reason and philosophy of atheism, and to demonstrate its impossibility. *C.* favoured the Platonic philosophy, and in physics adopted the atomic theory. From their views the group of which he was leader were known as Cambridge Platonists. His *Treatise Concerning Eternal and Immutable Morality* was pub. in 1731. A number of his unpub. MSS. are in the Brit. Museum. See C. E. Lowrey, *The Philosophy of Cudworth*, 1884; F. J. Powicke, *The Cambridge Platonists*, 1926; W. C. de Pauley, *The Candle of the Lord*, 1937.

Cue, tn of W. Australia, chief in the Murchison goldfield dist. It is connected with Geraldton by rail.

Cue, in billiards, see BILLIARDS, *English Billiards*.

Cuenca: 1. Sp. prov., in Castilla la Nueva (q.v.), partly in the former prov. of La Mancha (q.v.). In general a dry

plateau, it has sev. fertile riv. valleys and a mountainous region, the Serranía de C., which has large coniferous forests. Area 6,639 sq. m.; pop. 336,350.

2. (Rom. *Conca*) Sp. tn, cap. of the prov. of C., built on a spur of the Serranía de C. between the deep gorges of the Júcar and the Huecar. It is an old tn, with seven gates and eight bridges, a fine Gothic cathedral, a ruined Moorish castle, and a 16th cent. bishop's palace. Near by is the Ciudad Encantada, a 500 acre rock formation eroded into the appearance of a ruined city. C. is a mkt tn. It was once famous for its silverware. Pop. 24,900.

3. Cap. of the prov. of Azuay, Ecuador, S. America, some 8470 ft above the sea. It is Ecuador's third largest city, and possesses a cathedral, a univ., and impressive public buildings. It is 19 m. from the Quito-Guayaquil railway (at Azogues). It trades in sugar, maize, coffee, fruit, cattle, etc. The making of Panama hats is a declining industry though still important. The new tyre and tube factory uses local sulphur deposits. Pop. 46,400.

Cuernavaca (formerly *Cuanhuahuac*), city of Mexico, cap. of Morelos state, 36 m. from Mexico City. It is finely situated, and has a cathedral, an agric. academy, the palace built by Cortés, and a co. hall with murals by Rivera. Brewing, cement-making, sugar-refining, paper- and cigar-making are carried on. It is popular as a week-end resort for inhabitants of Mexico City. Pop. 14,336.

Cues, Nicolaus von, see *CUNA, NIKOLAS OF*.

Cuesmes, tn in the prov. of Hainaut, Belgium, 3 m. from Mons. It has coal-mines and railway workshops. Pop. 11,000.

Cuesta, name given by Amer. geologists to a certain land formation consisting of an unsymmetrical ridge with a strong escarpment on one side and a gentle slope on the other. Of Sp. origin, the name is used in New Mexico and SW. U.S.A. for low ridges of this kind. The Cotswold and Chiltern Hills are C.s or scarp ridges.

Cueva, Juan de la (c. 1550-1607). Sp. playwright and poet, b. Seville. He wrote lyrical and epic poetry, and his plays are important for their departure from the classic model and their more romantic style. He was one of the founders of the Sp. national drama. Among his works are *Primera Parte de las Comedias y Tragedias*, 1588; the epic *Bélica*, 1603; and *El Exemplar Poético*, 1605, the first Sp. didactic poem. See J. P. Wickershaw Crawford, *Spanish Drama before Lope de Vega*, 1937; M. Menéndez y Pelayo, *Ideas Estéticas*, 1940.

Cuevas de Vera, or *Cuevas de Almanzora*, Sp. tn in the prov. of Almería, on the Almanzora. It is the mkt tn of a rich agric. dist., and has industries based on the silver and lead mines of the Sierra Almagra. Pop. 12,000.

Cui, César Antonovich (1835-1918), Russian military engineer and musical composer, b. Wilno, son of a Fr. officer, a survivor of Napoleon's army, who was

unable to follow the retreat from Moscow (1812). C. was educated at the Wilno 'Gymnasium' and studied music with Moniuszko. He soon entered the military college at St Petersburg (1850), later becoming prof. of fortification there and elsewhere. His operas include *The Captive in the Caucasus*, 1857-82, *William Ratcliff*, 1869, *Angelo*, 1876 (on Hugo's drama), *Le Flibustier*, 1894 (on Richépin's comedy), and *Mam'zelle Piff*, 1903 (on Maupassant's story). See Countess de Mory-Argenteau, *César Cui*, 1888.

Cuiabá, city and cap. of the state of Mato Grosso, Brazil, on the C. R., a riv. port shipping cattle, ipecacuanha, and other products. The gold-mines, which have been worked since 1719, are declining in importance. The traffic is chiefly in the exchange of gold for iron and other implements. The tn is well built and in it stands the obelisk marking the centre of South America. It has a military hospital, arsenal, palaces for the governor and the bishop, and collegiate schools. It is an important and rapidly developing distributing centre, altitude 770 ft. The temp. varies between 104° and 50°. Pop. 24,100.

Cuinchy, vil. in N. France, to the SW. of La Bassée. In the First World War, C. came within the area covered by the battle of Loos, Sept. 1915 (see *LOOS, BATTLE OF*). The main advance took place on 25 Sept. This was preceded by a two days' bombardment. Although the Brit. had used gas, the atmospheric conditions proved unfavourable for its employment; but the Brit. success on other parts of the front caused the Ger. forces to give way eventually at C.

Cuirass (Lat. *corium*, leather), originally a jerkin or leather garment for soldiers. In medieval times the name was applied to metal plate armour protecting the body, front and back, from the neck to the waist. The name 'Cuirassiers' was given to heavily armed cavalry of the first half of the 17th cent., whose armour extended from the head to the knee, and later to troops wearing a helmet and breast and backplate only. After Waterloo certain historical C.s were adapted for modern use. See also *ARMOUR*.

Cuirassiers, name of a kind of heavy cavalry, a survival of the men-at-arms of feudal armies and of the troopers of the 16th and 17th cents., who wore cuirasses and helmets. The first Austrian corps of 'kryssiers' was formed in 1484 by Emperor Maximilian; by 1705 there were twenty such regiments. The Prussian C. were so called under Frederick William I, playing a prominent part in the wars of Frederick the Great. In France C. date from 1666. Until comparatively recent years both Fr. and Ger. armies had twelve cuirassier regiments each, the Russian four. The Life Guards and Royal Horse Guards had steel cuirasses given them in 1821. They are worn on ceremonial and guard duties.

Cujas, Jacques (Latinised name *Cujacius*) (1522-90), Fr. juriconsult, b. Toulouse. He studied law under Arnaud Ferrier. His great reputation as a jurist

was gained through his lectures on Rom. law as studied from the originals instead of from the works of commentators. He had an enormous library of old Rom. MSS., of which the greater part have unfortunately been scattered and lost. Besides his lectures on Justinian, he pub. notes on the *Receptae Sententiae* of Paulus and *Paratita*, or summaries of the *Digest*, particularly of the Code of Justinian. The best collection of his works is that pub. by Fabrot at Paris (1658) in ten vols.; republished at Naples and at Venice with additions (1758-83) in eleven vols. See J. Berriat Saint Prix, 'Mémoires de Cujas,' appended to his *Histoire de Droit Romain*, 1821.

Culasi, or **Colasi**, tn of the Philippine Is. It is situated on the coast of Panay, and is noted for its fisheries. It produces also rice and sugar. Pop. 20,601.

Culbin, see MORAY.

Culdees (Celtic *ceile De*, a companion of God), anct religious communities once found in Ireland and Scotland. Their origin and early hist. are very obscure. It is probable that they originated when the rule of St Chrodrigang, archbishop of Metz (d. 766), was introduced into Ireland. The rule, originally instituted for secular priests under no monastic vows, was extended to include the anchorites (q.v.), and the order of C. became a sort of annex to the regular monasteries. They never attained to great importance in Ireland, but when they crossed to Scotland at the end of the 8th cent. they found their opportunity awaiting them because of the gap left by the expulsion of the Iona monks by Nechtun, king of the Picts, in 717, and the inadequacy of the Rom. monks from Northumbria who had come to fill their place. Their life henceforward was very similar to that of the secular canons in England. The chief Culdee houses were at St Andrews, Dunkeld, Loch Leven, Monymusk, and Abernethy. In the reforms inaugurated by St Margaret and carried out by her son David I the C. became canons regular or were absorbed into the regular religious orders. By the beginning of the 14th cent., the C. as a separate body had disappeared in Scotland. See J. Jamieson, *Historical Account of the Ancient Culdees*, 1811; Wm Reeves, *The Culdees of the British Islands*, 1864; and W. F. Skene, *Celtic Scotland*, 1876-80.

Culebra, or **Passage Island**, is. of the W. Indies in the Virgin group, 20 m. from Cape San Juan, Puerto Rico.

Culemborg, see KULENBURG.

Culiacán, city and cap. of Sinaloa state, Mexico. It stands on the R. C., 180 m. WNW. of Durango, connected to Altata, its port, by railway. It has leather and textile industries, and is an agric. centre. The tn, now extensively modernised, was founded in 1531, and is the seat of a bishop. Pop. 50,000.

Culicidae, the dipterous insects known to us familiarly as the mosquito, midge, and gnat family are widely distributed, and in Britain they are represented by about a dozen species. The eggs are laid on substances floating in stagnant water,

and the larvae live on the surface. *Culex pipiens* is a mosquito frequently found in Britain, and it also inhabits the E. Indies.

Cullion, community of nearly 5000 lepers on a small is. to the N. of Palawan prov., Philippine Is. They elect their own council and supply the policemen and other subordinate officials. Many have been completely cured.

Cullen, Paul (1803-78), Irish Rom. Catholic prelate; educ. in Rome, and rector of the Irish college there, and of the Propaganda College in 1848, securing Amer. protection to prevent confiscation of its property during the revolution under Mazzini. Pius IX made Dr C. Archbishop of Armagh and primate of Ireland in 1849. He was translated to the archdiocese of Dublin in 1852, and was created a cardinal in 1866, being the first Irishman to attain to that dignity. Cardinal C. aided O'Connell, and helped the Brit. Gov. to suppress Fenianism. At the Vatican Council he advocated the definition of papal infallibility. C. was the reputed author of a treatise to prove that the earth did not move. He disapproved of the clergy taking an active part in politics. He estab. numerous schools, convents, hospitals, and churches in Ireland.

Cullen, William (1710-90), physician, b. Hamilton, Lanarkshire. He was M.D. Glasgow (1740), and prof. of medicine there (1751). In 1755 he left for Edinburgh where he was successively prof. of chemistry (1755), physiology (1766), and medicine (1773). Famous as a teacher, he was one of the founders of the Glasgow Medical School. His chief works are *Synopsis Nosologiae Medicæ*, 1769, in which he classified diseases by their symptoms; *First Lines on the Practice of Physic*, 1776-84; and *Treatise on Materia Medica*, 1789. See life by J. Thomson, 1859.

Cullen, seaside resort and burgh of Scotland, in the co. of Banff, situated on C. Bay. Since 1200 it has been a royal burgh. There is a fine mrkt.-place, with a council chamber, assembly hall, and court-room. It possesses a good harbour. Cullen House, home of the Countess of Seafield, is near by, and is open to the public 2 days a week. Pop. 1555.

Cullera, Sp. tn in the prov. of Valencia, on the estuary of the Júcar (q.v.). It has a ruined castle and anct walls, and a trade in agric. produce. Pop. 15,000.

Cullinan Diamond, also known as the **Star of Africa**, largest known diamond, found in the Premier Mine, E. of Pretoria, Transvaal, in Jan. 1905, and called after Thomas C., the chairman of the company owning the mine. Uncut, its weight was about 3106 metric carats, 3 times heavier than that of any other one known. The gem measured about $4\frac{1}{2}$ by $2\frac{1}{2}$ by 2 in., and its girth was $8\frac{1}{2}$ to $11\frac{1}{2}$ in. It had fine cleavage planes, as though only a portion of a larger crystal. The colour for so large a stone was exceptionally pure. It was valued at from \$2,500,000 to \$5,000,000.

Culloden, moor (known to Highlanders as Drummossie Moor) in Inverness-shire,

Scotland, famed for a victory gained in 1746 by the Duke of Cumberland over the Pretender, Charles Stuart. The victors cruelly massacred the wounded Highlanders. This was the last battle fought in Britain; a calm and green mounds mark the soldiers' burial-places.

Cullompton, tn of Devon, England, on R. Culm, 12 m. from Exeter. It has an old church in the Eng. Perpendicular style, with a tower 100 ft high. Pop. 3400.

Cullum, Ridgwell (1867-1943), novelist, b. London. At the age of 17 he joined in the Transvaal gold rush; later he went fur-hunting on the Yukon, then cattle-ranching in Montana. He wrote fast-moving adventure stories with a Canadian background, which was then a novelty. They include *The Brooding Wild*, 1905; *The Night Riders*, 1906; *The Twins of Suffering Creek*, 1912; *The Heart of Unaga*, 1920; and *The Child of the North*, 1926.

Culm (geology), rocks of Upper Carboniferous age occurring in Cornwall and Devon. They are merely barren coal-measures. In mining C. denotes an inferior grade of small steam coal or anthracite. In brewing C.s are the rootlets which form on the cereals used after steeping and are subsequently removed for use as cattle food or manure.

Culmination (Lat. *culmen*, summit), astronomical term for the passage of a heavenly body when it crosses the meridian. There are 2 C.s in the course of 24 hours, the upper, above the pole of the heavens, and the lower, below the pole.

Culpeper (Culpepper), Nicholas (1616-1654), medical writer and astrologer, b. London. A supporter of the Parliamentarians and religious sectarians. In 1640 he set up as astrologer and physician in Red Lion Street, Spitalfields. *A Physical Directory*, 1649, his unauthorised trans. of their *Pharmacopoeia*, excited great indignation among the College of Physicians against C. for infringing the monopolies of medical writers. Other works are *Scmeistica Uranica*, 1651, and *The English Physician*, 1653. The latter has been reissued in various eds. ever since, the last in 1932. C.'s works were ed. by G. A. Gordon in 1802. See L. Powys, *Thirteen Worthies*, 1923.

Culross, par. and burgh of Fifeshire, Scotland, on the N. side of the Firth of Forth, WNW. of Edinburgh. It contains the ruins of a Cistercian abbey which was founded in the 13th cent. Its former deep submarine coal-mines are exhausted. Pop. 4500.

Cultivated Plants. It is almost impossible to say when plants were first cultivated, but it is known that millet, rice, and figs are among some of the very oldest of our present-day products. Investigation has proved the original habitat of most plants, and the wild form has in many cases ceased to exist. At the present day cultivation has reached such a pitch that the form in which we know the plant varies very much from the original wild one, and there are various devices known for the further improve-

ment or development of the plant in question. Some plants are cultivated for their seeds, such as all cereals, peas, beans, mustard, etc.; others for their leaves, such as cabbage of all kinds, spinach, tobacco, tea, water-cress, etc.; others again for their flowers, such as cauliflowers, cloves, etc.; some for their young shoots and stems, as asparagus and rhubarb; and some again for their fruits, such as plums, oranges, gooseberries, all kinds of nuts, cucumber, tomatoes, etc.; and last but not least is that large class of plants of great service to man cultivated for their roots and tubers. There are many useful products from certain plants which are much cultivated for various purposes apart from edible uses, e.g. starch, vegetable acids, such as citric and oxalic, gums, rubber, all the numerous narcotics, such as opium, morphia, etc.

Cultivation, or Tillage (Late Lat. *cultivare*, to cultivate, from Lat. *colere*, to till; O.E. *teolian*, *tilian*; Gothic *tilon*, to strive for), denotes the process of cultivating soil for the purpose of agriculture. It consists of digging, ploughing, harrowing, rolling, spading, hoeing, etc., all of which operations tend to increase the goodness of the soil, and thus to increase its fertility. For surface tillage harrows, weeders, and other agric. instruments of the fork and spade variety are used. Pulverisation of the soil is essential for the root growth of plants. Breaking up the soil and removing stones and impedimentary matter facilitates the free development of roots and also the free passage of earth and air which increases the health of the plants. Deep ploughing is generally done in the autumn, as during the winter months the changes in temp. affect the soil, causing expansion or contraction according as the weather is wet or frosty. Pulverisation also favours the activity of beneficial organisms in the soil (see NITRIFICATION), and promotes the solution of mineral matter. It also brings about the destruction of weeds and insects which are injurious to the development of cultivated plants. 'Cultivators' are the best instruments for destroying weeds. They are also called grubbers, and a special variety is called a scarifier. The cultivator consists of a triangular or rectangular iron frame, with fixed teeth or tines. Harrows and rollers are useful in separating the weeds from the soil. When the weeds have been removed the earth is well ploughed, and manure dug deep into the soil. Sub-tillage, or sub-soiling, forms a very important part of C. Below the surface clay, chalk, and gravel are found, and it is the aim of the agriculturist slowly to cultivate his soil to a greater depth. Heavy clay soil needs constant turning over, and manure should be worked into it. Inter-tillage is carried on while the soil is still occupied by a crop. Trenching and draining also form an important part of C. See AGRICULTURAL MACHINERY; AGRICULTURE; GARDENING; PLOUGHS AND PLOUGHING.

Culverin (Fr. *coulverine*; more remotely Lat. *colubra*, snake), term applied loosely

to any small gun in the early days of firearms. In the 16th cent. it meant the heaviest gun in ordinary use, throwing an 18-lb. shot. It was so called from its serpent-shaped handle. Culver and whole C. (as distinguished from demi-C., a smaller piece of ordnance) were variations of the name.

Culverwell, Charles, see WYNDHAM, SIR CHARLES.

Cumae, anc. city on the W. coast of Campania; founded in 750 BC, and therefore the earliest Gk colony in Italy or Sicily. It was the parent of Neapolis (Naples) and Putcoli, having already assisted the Chalcidians to found Zancle (Messina) in 721 BC. As an independent city-state C. attained considerable power and enjoyed great prosperity, notwithstanding repeated attacks by the Etruscans and other people. In 417, however, it was taken by the Samnites (see SAMNITUM), and afterwards became subject to Rome (c. 340 BC). In the second Punic war it resisted a Carthaginian siege (Livy xxiii), and continued to flourish until imperial times when its prosperity faded. Its geographical situation was of great strategic value: it was garrisoned by the Goths, and was the last place in Italy to hold out against Narses. C. was the traditional residence of the earliest sibyl.

Cumaná, city and cap. of Sucre state, Venezuela, situated about a m. from its port, Puerto Sucre, near the mouth of the Gulf of Cariaco. Bp. of Bolívar's great lieutenant, Antonio José Sucre. It claims to be the oldest European settlement (on grounds of continuous habitation) in S. America. There is a trade in sugar, cacao, tobacco, etc. The climate is hot, and earthquakes often occur: C. was almost completely destroyed by an earthquake in Jan. 1929. Pop. 50,000.

Cumania, see KUMANIA.

Cumans (Russian *Polovtsy*), warlike Turkic-speaking people of the Middle Ages. They appeared in the S. Russian steppes in 1054, and often raided the Kievan State (see KIEVAN RUSSIA) and Byzantium. They were routed by the Tatars in 1238 (see BATU).

Cumberland, Ernest Augustus, Duke of, and King of Hanover (1771-1851), fifth son of George III. He made the army his career. In 1810 he was found wounded in his bed, and his valet, Sellis, dead in an adjoining room. The coroner's jury accepted the view that Sellis had tried to murder his master and had then committed suicide; but public opinion believed that the duke had murdered Sellis. On the accession of Victoria he became King of Hanover.

Cumberland, Richard (1632-1718), moral philosopher and Bishop of Peterborough, b. London, and educ. at St Paul's School and Magdalene College, Cambridge. Among his college friends was Samuel Pepys. C. won a great reputation for learning both in science and philosophy and for his simple and upright life and fulfilment of his episcopal duties. Among his works is *De Legibus Naturae disquisition in qua Elementa Philosophiae Hobbianae refutantur*, 1672 (trans. 1727), written in reply to

Hobbes and upholding the utilitarian principle of the public good being the end of morality. He dedicated his *Essay on Jewish Weights and Measures*, 1686, to his old friend Pepys. See *Pepys's Diary*.

Cumberland, Richard (1732-1811), dramatist, b. Cambridge. He was educ. at Westminster and Trinity College, Cambridge. On leaving the univ. he became private secretary to Lord Halifax at the Board of Trade, the office being almost a sinecure. He wrote more than 50 plays, the first to be produced being *The Summer's Tale* in 1765, and the most successful *The West Indian*, brought out by Garrick 6 years later at Covent Garden. C. now moved in literary circles, but his sensitiveness to criticism prevented his ever becoming popular. He quarrelled with Goldsmith, and Sheridan, whom he had offended, caricatured him as Sir Preful Plagiary in *The Critic*. He wrote many poems and prose works between 1754 and 1811, of which *Memoirs of Richard Cumberland Written by Himself*, 1806-7, is best known. He was buried in Westminster Abbey. See S. T. Williams, *Richard Cumberland, his Life and Dramatic Works*, 1917.

Cumberland, William Augustus, Duke of (1721-65), soldier, third son of George II, then Prince of Wales. He entered the army, and at the age of 21 he was gazetted major-general. Two years later he was appointed to the command of the allied forces in the Netherlands, with Königsegg as his adviser; and in 1745 the office of captain-general of the Brit. land forces at home and in the field, dormant since Marlborough's day, was revived in his favour. He took an active part against the rising of '45, and after the battle of Culloden in 1746 treated the rebels with such severity that he was nicknamed Butcher. See life by E. Charters (2 vols.), 1913 and 1920.

Cumberland, the most N.W. co. of England, bounded on the W. by the Irish Sea and Solway Firth, on the N. by Roxburgh and Dumfries, on the S. by Westmorland and Lancs. and on the E. by Northumberland and Durham. After the withdrawal of the Romans, who left many relics, coins, altars, and inscriptions, C. became part of the Brit. kingdom of Strathclyde. In 875 the first reference is made to the kingdom of the Cumbrl, and in 945 it was ceded by Edmund to Malcolm of Scotland. Henceforward, until the union of the crowns, it was part of the battleground over which the quarrels between the two nations were fought. The small landowners in the co., whose lands have been in their families for centuries, are known as 'statesmen,' but most of such small estates have now been absorbed by the large landowners. The greater part of its surface is mountainous. The SW. half is taken up by the beautiful Lake Dist. (q.v.), shared with the neighbouring co. of Westmorland. Here are the Cumbrian Mts, with the peaks of Scafell (Scafell Pike, 3210 ft. the highest point in England), Scawfell (the lower summit, but the finer peak, 3162 ft.),

Skiddaw (3058 ft.), and Helvellyn (3118 ft.); and Derwentwater with the falls of Lodore, Bassenthwaite, Ennerdale, Buttermere, and Crummock Water. Westwater, Thirlmere, and, on the Westmorland border, Ullswater. From the Lake Dist. a network of valleys runs N., W., and S. to a wide coastal plain, and the valley of the Eden divides it from the Pennine Chain, which reaches its highest point in this co. in Cross Fell (2930 ft.). The N.W. portion, bordering on the Solway Firth, is low and flat. The chief rivs. of C. are the Eden, the Liddel, the Esk, the Derwent, and the Uddon. Considerable tracts of land and mts are owned by the National Trust.

The climate is mild except on the uplands during the winter. The rainfall of the Lake Dist. is the heaviest in England.

of manufs., including iron, steel, engineering, chemicals, textiles, scientific instruments, and plastics. The atomic plant at Windscale was the first in the country to produce plutonium, and other plants are in course of erection near by for the production of electrical power. Large quantities of salmon are caught in the Solway. The chief tns are Carlisle (the cap.), Cockermeuth, Whitehaven, Workington, Maryport, Wigton, Penrith, and Keswick. C. is part of the diocese of Carlisle, and is divided into 3 parl. divs.: Penrith and the Border, Whitehaven, and Workington, each returning 1 member. The municipal bors. are Carlisle, Whitehaven, and Workington. Area 968,598 ac.; pop. 273,000.

Cumberland: 1. Co. seat of Allegheny co., Maryland, U.S.A., situated on the



CRUMMOCK WATER, CUMBERLAND, ENGLAND

On the left is Mellbreak (1688 ft); on the right Grassmoor (2787 ft)

In the mountainous dists. the soil is mainly thin and poor in quality, but in the plains dry loam predominates, and produces large quantities of oats and turnips, and a little wheat and barley. In the hill pastures cattle and sheep are reared, the Herdwick variety of the latter being peculiar to the co. C. is rich in minerals, coal being worked extensively round Whitehaven, Maryport, and Workington, with much accompanying iron ore, which is also found in the S. near Millom. Gypsum, anhydrite, zinc, and lead are mined, and limestone, granite, and slate are quarried. A little silver is still found, but the copper mines near Keswick and the plumbago works near Borrowdale have been closed. Manufs. include biscuits, engineering, metal containers, and textiles at Carlisle and in the surrounding neighbourhood; and pencil mills at Keswick. The W. of the co. is the most highly industrialised, with a wide range

R. Potomac, NW. of Baltimore, in mt scenery. It is the state's second largest city. It stands on sev. railways, among them the Baltimore and Ohio Railway, and is also situated on the Chesapeake and Ohio Canal. Chief industries: iron and steel, glass, railway cars and locomotives, rayon, clothing, tyres, dairy products, and beer. It has railroad shops, lumber mills, and an airport, and exports large quantities of coal and limestone. A fort was built here in 1754. Pop. 37,680.

2. Tn in the co. of Providence, Rhode Is., U.S.A. It includes 10 vils., which manuf. cotton and silk goods, nuts, bolts, wire products, and shovels. Pop. 12,842.

'Cumberland,' Brit. cruiser (class A.C., 9800 tons displacement), completed in 1904; and a Kent class Brit. cruiser of the same name, completed in 1928, a 10,000-ton ship carrying 8 8-in. and 4 4-in. anti-aircraft guns. This ship joined

Commodore Harwood's S. Amer. Div. off Montevideo after the Battle of the Riv. Plate. She was present when the Ger. pocket battleship *Graf Spee* scuttled herself on 17 Dec. 1939. Ships of this name figured largely in the 18th and 19th cents., as at the capture of Calcutta, 1757. A Federal war vessel of this name, commanded by Lt Morris, was sunk by the Confederate ram *Merrimac* in Hampton Roads, March 1862.

Cumberland Gap, pass in the C. Mts (alt. 1700 ft.), is situated in the SW. of Virginia, U.S.A. Its chief importance during the time of the Civil War lay in its position. It was held alternately by the Confederates and the Federals. The National Historical Park here was authorised by Congress.

Cumberland Lodge, in Windsor Park, Berkshire, England, was formerly the residence of the ranger. It was enlarged by Wm Augustus, duke of Cumberland (q.v.), who resided there.

Cumberland Presbyterian Church, Amer. religious sect organised in 1810 in Kentucky and Tennessee. It was the outcome of a great 'revival,' when there was a dearth of fully trained preachers to meet the public demand, and men without the usual high standard of theological and educational training demanded by the Presbyterians were ordained. In 1813 the C. Synod adopted a confession of faith based on the Westminster Confession with certain additions and amendments, and this was again revised at a later date. The doctrines of predestination and unconditional election were eliminated, and the universality of the atonement was accepted. In 1826 a college was estab. in Princeton, Kentucky, but it was transferred to Lebanon in Tennessee in 1842, becoming the C. Univ. In 1906 the majority of the members rejoined the Presbyterian Church in the U.S.A.; but the minority maintained the name and the organisation, with a membership in 1949 of 80,000. The Coloured C. P. C. was an offshoot of the original C. Church, establishing a separate identity in 1869, soon after the Civil War; its membership in 1949 was 30,000.

Cumberland River, U.S.A., trib. of the Ohio, rises in the C. Mts in Kentucky. Its course assumes a SW. direction and then a NW. one till it joins the Ohio R. at Smithland, 12 m. ENE. of Paducah. The riv., which is navigable as far as Wolf Creek Dam (461 m. upstream), is 693 m. long.

Cumberland Valley, in Pennsylvania, U.S.A., a fertile piece of land watered by the tribs. of the Susquehanna R., its position being between that riv. and Maryland. It is a continuation of the Shenandoah valley.

Cumrnauld, par. in Dunbartonshire, Scotland, 14 m. NE. of Glasgow. Nearby are the remains of Rom. fortifications. Pop. 5300.

Cumbrae, Great and Little, are two is. in the frith of Clyde, Scotland. They belong to the co. of Bute. The tn of Millport is on the G. C. On the smaller is. are a modern lighthouse and eccles. and castle ruins. Pop. 2200.

Cumbrae, La, see USPALLATA.

Cumbrae Pass, see USPALLATA.

Cumbrian Mountains, group of mts in England, stretching from Fell Top, Cumberland, to the slate quarries in Lancashire, about 40 m. from N. to S. Scafell Pike (3210 ft.) (q.v.) is the highest point.

Cumbrian Rocks, forming the C. Mts of England, consist in the N. and E. of Lower Carboniferous (shale and grit) rocks, with limestone beds. In the S. are volcanic ashbeds and lavas. A few species of Graptolites and Trilobites have been found, but fossils are rare.

Cumene, or **Isopropyl Benzene**, liquid obtained by distilling cumalic acid with soda-lime, or by boiling benzene and isopropyl chloride in the presence of anhydrous aluminium chloride. It has an agreeable odour and on oxidation gives benzoic acid.

Cumiana, lt. tn. in Piedmont (q.v.), 15 m. SW. of Turin (q.v.). Pop. 5000.

Cumin, or **Cummin**, fruit of a plant which grows wild near the Nile and is cultivated in S. Europe and India. The fruit, improperly called seed, is greyish-yellow, strongly aromatic, and the taste is bitter and disagreeable. These C. seeds were formerly used in ordinary medicine, but they are now employed only in veterinary practice except when forming an ingredient of curry powders or flavouring for liqueurs, cheese, and breads. C. is mentioned in the Bible.

Cumming, see COMYN.

Cummings, Bruce Frederick, see BAR-BELLION, W. N. P.

Cummings, Edward Estlin (1894-), Amer. poet, b. Cambridge, Massachusetts. He was educ. at Harvard, where his father had been a lecturer. In the First World War he volunteered as an ambulance driver in the Fr. army and wrote of his experiences in *The Enormous Room*, 1922. After the war he studied art in Paris, returning to New York in 1924. His *Tulips and Chinneys* had appeared in 1923, and in 1925 he won the Dial award for distinguished service to Amer. literature. After some further years in Paris he settled down in Greenwich Village. An ultra-modernist, he indulged in typographical oddities, preferring to write his name 'e. e. cummings,' and used jazz rhythm and a slang dialect. He has been described as one of the few successful verse-experimenters of his time. His works include *XLI Poems*, 1925, &, 1925, *Is 5*, 1926, *Viva*, 1931, *Eimi*, 1933, *No Thanks*, 1935, *Tom*, 1935, *V 20*, 1936, and *I x I*, 1944; his *Collected Poems* appeared in 1938. He also wrote *him*, 1928, a phantasmagoria in 21 scenes, and *Santa Claus: a Morality*, 1946; *six non-lectures*, 1953, is a critical work.

Cummins, Maria Susanna (1827-66), Amer. novelist, b. Salem, Massachusetts. Her chief works are *The Lamplighter*, 1854; *Mabel Vaughan*, 1857; *El Furcudis*, 1860; and *Haunted Hearts*, 1864.

Cumnock, tn and police burgh of Ayrshire, Scotland, in the par. of Old C., at the junction of Lugar and Glaisnock Waters. Industries include coal mining, and wool

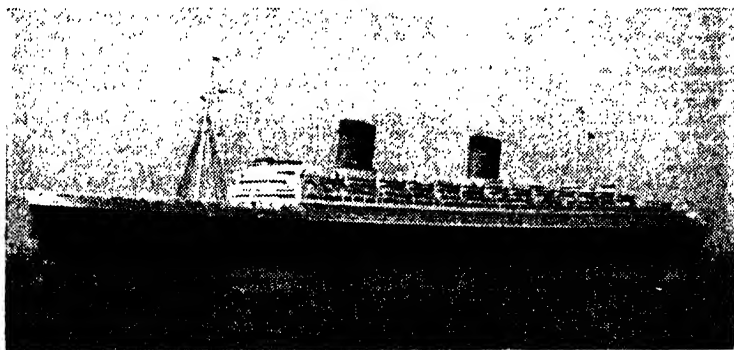
spinning and manuf. Considerable developments are taking place. Pop. (burgh) 5000; (with development area) 9000. 5 m. SE. is the vil. of New C.

Cumnor, vil. in Berkshire, England, 3½ m. WSW. of Oxford. Here was C. Hall, the house where Amy Robsart, the ill-fated wife of Robert Dudley, earl of Leicester, met her death. It is described by Scott in *Kenilworth*, but has since been destroyed. Part of the church dates from the 13th cent., and contains a chained Bible, and a statue of Queen Elizabeth, said to have been erected at the hall by Leicester. Pop. (1954) 1500.

Cumyn, see COMYN.

Cunard, Sir Samuel (1787-1865), ship-owner, b. Halifax, Nova Scotia, where he began life as a merchant. In 1839 he left for England, and founded the Brit. and N. Amer. Royal Mail Steam Packet Company to carry the Atlantic Mails, which later became the Cunard Line (q.v.), the first regular Atlantic steamship line.

propelled. In 1884 came the *Umbria* and *Etruria*, among the highest powered single-screw steamers ever built, which broke all existing speed records on their appearance, but were surpassed in 1893 by the first twin-screw ships of the C. Line, *Campania* and *Lucania* (12,950 tons). In the *Lucania* in 1901 Signor Marconi carried out many of his early experiments in wireless transmission, which led in 1903 to the pub. on board the *Lucania* of the first ship's newspaper to appear daily with news received by wireless. In 1907 came the famous sister ships, *Mauretania* and *Lusitania* (31,000 tons). One of the outstanding ships of the cent., the *Mauretania* held the record for the fastest Atlantic passage for twenty-two years. On war service between 1914 and 1918 C. liners carried nearly a million troops and ten million tons of cargo. Twenty ships totalling more than 200,000 tons were lost, including the *Lusitania*. An extensive building programme was begun after the



Cunard Steamship Co. Ltd

THE 'QUEEN ELIZABETH'

In 1859 C. was made a baronet. See CUNARD STEAMSHIP COMPANY.

Cunard Steamship Company, founded by Sir Samuel Cunard (q.v.), merchant of Halifax, Nova Scotia, and owner of sailing vessels plying between Halifax, Nova Scotia, Boston, and Bermuda. His original idea was a regular service of steamships which could do the journey across the Atlantic in less time than the Gov. sailing packets which usually carried the mails. On arriving in England in 1839 he obtained the help of George Burns and David MacIver and founded what is now known as the C. Line—at the same time obtaining a contract from the gov. to carry the mails. The first ship was the *Britannia* (1150 tons), which sailed from Liverpool for Halifax, Nova Scotia, and Boston on 4 July 1840, and she was followed by a succession of famous ships. The *Persia* (3300 tons) (1856) was the first mail service Cunard to be built of iron, and the *China* (2529 tons) (1862) was the first mail service ship of the line to be screw-

armistice, and by 1925 thirteen ships totalling 214,000 tons had been completed. Plans for a weekly transatlantic service maintained by two ships instead of three resulted in the building of the *Queen Mary* (81,237 tons) and *Queen Elizabeth* (83,673). The *Queen Mary* (length 1020 ft; beam 118 ft) entered service in 1936, and made record Atlantic passages in Aug. 1938. The *Queen Elizabeth* (length 1031 ft; beam 118 ft), the world's largest liner, sailed in secrecy on her maiden voyage to New York in 1940 without passengers. Led by these two great liners the C. fleet carried over 4,400,000 passengers (mostly troops), handled 11,000,000 tons of cargo, and steamed 5,360,000 m. between Sept. 1939 and Dec. 1945. The two 'Queen' liners alone carried over a million and a half passengers on war service. Reconditioning, conversion, and new building were again necessary on a large scale when the war ended. Eight ships were put back into service after reconditioning, including the *Queen Elizabeth*, which made her first

sailing as a passenger liner in Oct. 1946. Since then 15 ships of a total gross tonnage approaching 200,000 have been built. These include the *Caronia* (34,183 tons), and 4 22,000-ton liners for the Canadian service, *Sazonia*, *Ivernia*, *Carinthia*, and *Sylvania*, the largest Cunarders to be specially built for the St Lawrence route. In 1934 the North Atlantic fleets of the C.S.C. and the White Star Line were amalgamated under the name of Cunard White Star Limited, but in 1950 the Company reverted to its original title of the Cunard Steamship Company Limited. The gross tonnage of Cunard and subsidiary companies totals over 990,000.

Cunas, tribe of Amer. Indians living in the isthmus of Darien. They formerly had a stratified class society, but today are much altered and have a simple culture and organisation. See J. H. Steward, *Handbook of South American Indians*, vol. IV, 1948.

Cunaxa, anct. tn about 60 m. from Babylon. It was here that a battle was fought in 401 bc between Artaxerxes and Cyrus the Younger, in which Cyrus was killed—the story of the battle being related by Xenophon.

Cundurango, see CONDURANGO.

Cunego, Domenico (1727-94), celebrated It. engraver, b. Verona. He studied as a painter under Francesco Ferrari, but deserted painting for engraving and settled in Rome, 1761. He engraved 22 plates for Gavin Hamilton's *Scota Italica*, among which were some of the frescoes of Michelangelo in the Sistine Chapel, 'La Fornarina' of Raphael, and also his 'Galatea'.

Cuneiform Writing is probably the earliest known system of writing. The name cuneiform, from Lat. *cuneus*, wedge, was suggested about 250 years ago by Thomas Hyde, regius prof. of Heb. at the univ. of Oxford, and is given to scripts once in use among the peoples of Mesopotamia and neighbouring countries. The characters of these scripts were formed of combinations of strokes having the shape of a wedge, cone, or nail, and called, by the anct users, fingers. This peculiar form of the characters was not a device deliberately chosen, but came about more or less by accident. The chief writing material of Mesopotamia was clay of a particularly fine but coherent kind, which was found in the alluvial soil of that country. The early users of this clay for the purpose of writing soon discovered that one could draw the characters in the moist clay much better and more quickly by impressing them than by scratching. As curves and fine lines could not be impressed satisfactorily, C. W. consists of short, straight, vertical, horizontal, or oblique strokes or angles. Naturally the strokes impressed were thick on the top and on the left, thus giving birth to a series of wedge-shaped characters. These were impressed, line by line, with a special instrument, now known as a stylus, and called by the users tablet-reed. Indeed normally it was made of reed, although sometimes the wooden stylus was employed. During the long period of over

3000 years for which C. W. remained in use the characters naturally underwent considerable transformation. Indeed at the beginning the writing was not cuneiform at all. The characters may have been purely pictorial, the picture symbols representing various objects, animate and inanimate. However, even the earliest extant written tablets (from Uruk IV, see below) do not represent the primitive stage in which all the signs in use were fully pictorial. It is therefore disputed whether such a stage ever existed, the Uruk IV tablets representing instead the actual first essays at writing *ex nihilo*, and already containing many schematic signs, so far conventionalised that the objects depicted cannot be identified at all. At a later stage the script became linear; curved lines began to disappear and to be replaced by straight lines set at angles to one another. Finally the strokes were converted into wedges, and the objects originally depicted, except in the rarest cases, became nothing but unrecognisable symbols.

The exact date of the invention of the C. W. is unknown. The aforementioned earliest extant written tablets, numbering about 570, were discovered in the fourth or lowest archaeological stratum of Warka (known as Uruk IV), the biblical Erech, and generally are assigned to the middle of the fourth millennium bc. It is also uncertain what people invented this writing, but it is generally believed that they were the Sumerians, the non-Semitic creators of the most anct civilisation of Mesopotamia.

The development of the C. W. was parallel in some respects with that of the Egyptian, Chinese, and other analytic scripts. In other respects the C. W. was perhaps unparalleled; for instance, during the transition period from pictograph to cuneiform signs, perhaps about 3200 bc, there was a complete change of the direction of the signs. The reason of this change is thus explained. The earliest tablets were small enough to be held in the palm of the left hand, and the characters were impressed vertically. When the tablet increased in size it could not be so held; it was then laid on a table at right angles to the body. The signs were written as before, but when read in the turned position of the tablet the symbols appeared to be lying on their back, i.e. turned at an angle of 90 degrees. Afterwards the symbols were always drawn in this position. In inscriptions on stone or metal the old position of the signs persisted for a few centuries more, but in the course of time the practice came into line with that followed on clay tablets. As in the Egyptian and Chinese scripts, the range of expression of cuneiform signs was very wide. In the first place the signs represented concrete objects; at a second stage the use of the signs depicting concrete objects was extended to express concrete concepts and abstract ideas related in meaning; for instance, the solar disk also came to indicate the ideas of day and time. The characters thus were ideographic word-signs or ideograms.

At a later stage, introducing the phonetic principle, the C. W. became a *rebus*-script; many signs became phonograms, i.e. signs representing sounds. Without any regard to their original meaning they also were taken to represent syllables, which could be used in writing a word either consisting of that syllable or of which that syllable was a component element. This device was particularly used to indicate grammatical relations (such as pronouns, adverbs, prepositions), prefixes and affixes, foreign words, place-names and personal names, and so forth. On the whole, the Sumerian cuneiform script mainly consisted of word-signs, while the Mesopotamian Semitic peoples mainly employed the syllabic value of the characters (without, however, eliminating the use of old ideographs as word-signs). The highest achievement of the users of C. W. was to isolate the vowels and represent them by distinct signs, but there was never shown any tendency towards an alphabetic system, including the representation of the consonants by distinct signs. There were two exceptions to this general rule, the cuneiform alphabetic writing of Ugarit and the Early Persian script. The former was a script (of the 16th to 13th cents. bc) connected only in the external form of the characters with the cuneiform systems of writing; the latter was a semi-alphabetic and semi-syllabic script, also including 4 ideographs, and was perhaps suggested by the Aramaic alphabet.

The employment of the cuneiform characters, with both their ideographic and phonetic values, on the one hand, and their adaptation to the needs of languages belonging to different linguistic groups, had the result that many signs became *polyphones*, i.e. representing many sounds; others were *homophones*, having similar phonetic values, but representing entirely different objects. In order to remove ambiguities and confusion in the interpretation of the texts, two devices were introduced: (1) *determinatives*, that is signs which were not pronounced and were placed before or after the ideograms to be determined; these determinative signs defined the meaning of the ideograms by denoting the class to which the ideogram concerned belonged, such as deities, men and women, animals, plants, countries, numbers, plural, and so forth; (2) the use of syllabic signs as phonetic complements, consisting of a consonant and a vowel, which were placed after a polyphone sign ending with the same consonant.

The hundreds of thousands of clay tablets extant, written in cuneiform characters, are couched in the following languages: Sumerian, Babylonian, Assyrian, Cassite, Elamite, Early Armenian (also known as Chaldean or Urartu), Hittite, Mitannian, Hurrian, and Canaanite. Their importance for the knowledge of the ancient world is paramount. They reflect the classical age of Babylonian literature and science of Hammurabi (18th or 17th cent. bc), or the period when C. W. and the Accadian language were the

lingua franca of the ancient world (middle of the 2nd millennium bc); they are the remains of the rich libraries of the Assyrian kings (9th to 7th cents. bc). The decipherment of the cuneiform scripts was the achievement of the 19th cent. Maj. (later Maj.-Gen. Sir) Henry C. Rawlinson, who in 1846 pub. a trans. of the Early Persian part of the famous Behistûn (or Bisitûn) trilingual inscription, may be considered as the father of modern decipherment of the cuneiform scripts.

See G. R. Barton, *The Origin and Development of Babylonian Writing*, 1913; E. A. Wallis Budge, *The Rise and Progress of Assyriology*, 1925; M. Rutten, *Éléments d'Accadien*, 1937; G. Ryckmans, *Grammaire accadienne*, 1938; D. Diringer, *The Alphabet, a Key to the History of Mankind* (pp. 41-57), 1948; G. R. Driver, *Semitic Writing from Pictograph to Alphabet*, 1948; R. Labat, *Manuel d'épigraphie akkadienne*, 1948; J. B. Pritchard and others, *Ancient Near Eastern Texts, etc.*, 1950; D. Diringer, *The Hand-produced Book*, 1953.

Cunene, riv., some 720 m. long, in Angola. Portuguese W. Africa. It rises on the tableland of Benguela, and descends in a series of rapids and reaches the sea with a westerly course, its mouth being blocked by sandbanks. The C. drains an area of 42,800 sq. m.

Cuneo: 1. Prov. of Italy, in SW. Piedmont (q.v.). It is generally high-lying, with peaks of the Maritime Alps (q.v.) in the W. and SW. The Tanaro, a trib. of the Po (q.v.), crosses the prov. S.-NE. The prin. tns include C., Mondovì, ALB, Saluzzo, and Cherasco (qq.v.). Area 2722 sq. m.; pop. 568,000.

2. (Fr. Coni) It. tn. cap. of the prov. of C., 45 m. SSW. of Turin (q.v.). It stands at the foot of the Maritime Alps, at the confluence of the Stura di Demonte and the Gesso. It was once strongly fortified and has been many times besieged. In general the tn is modern with line streets and squares. The cathedral has a 19th-cent. façade. C. is an important centre of communications, has a livestock and chestnut mkt, and has silk and cotton industries. Pop. (tn) 21,900; (com.) 39,200.

Cunha, Nuno da (1487-1539), Portuguese commander, distinguished himself by the capture, in 1529, of Mombasa (q.v.), now in Kenya. In the same year he superseded Sampeyo as viceroy of the Indies, and on his way out took Ormus, one of the E. Indies, which had rebelled and massacred the Portuguese, and dispatched the traitor Xaref, who had encouraged the revolt, to Lisbon. Without firing a shot C. succeeded in gaining possession of Diu, a stronghold on the Gulf of Cambay, which it was necessary to secure for the safety of his country's settlements. In 1537 he was bravely defending Diu with a garrison of 700 against the assaults of Soliman, the Turkish admiral, when he was recalled home.

Cunha, Tristão da (1460-1540), Portuguese navigator and discoverer. In 1504

he was nominated the first viceroy of Portuguese India, but a temporary attack of blindness prevented him from filling the post. Two years later King Emmanuel entrusted C. with a fleet of 16 vessels, 5 of which formed a squadron under the command of Alphonso D'Albuquerque. With this detachment C. discovered a group of 3 volcanic is. in the S. Atlantic, which still bear his name (see TRISTAN DA CUNHA), visited Madagascar and Mozambique, defeated the Arabs in Brava, and took possession of Sokotra (1507). His object was to gain control of all the trade with the E., and as an aid to this he built a fort at Coco (Tamarida). In 1514 the king chose him as envoy to Pope Leo X, who received homage from C. for the new Portuguese lands.

Cunningham, Sir Alan Gordon (1887-), soldier, educ. at Cheltenham and Royal Military Academy, Woolwich. Entered army, 1906. Served on W. front in First World War, and five times mentioned in dispatches. Instructor, machine-gun school, 1928-31. Commander Royal Artillery, 1st Div., 1937-8. Major-general, 1938. Commander-in-chief of the victorious imperial troops which conquered It. E. Africa, 1940-1 (see ITALIAN EAST AFRICA, SECOND WORLD WAR, CAMPAIGN IN (1941)). Commanded imperial troops which advanced into Cyrenaica, Nov. 1941; replaced by Maj.-Gen. Ritchie the same month after armoured actions at Sidi Rezegh (see AFRICA, NORTH, SECOND WORLD WAR, CAMPAIGN IN). Commandant, Staff College, Camberley, 1942. Lieutenant-general, 1943. General officer commanding N. Ireland, 1943-4. General officer commanding in chief E. Command, 1944-5. High Commissioner and commander-in-chief for Palestine and High Commissioner for Transjordan, 1945-8. Col. commandant R.A., 1944-54. General, 1945.

Cunningham, Sir Alexander (1814-93), authority on Indian archaeology, was a son of the poet, Allan C. Many years of his life were spent in the Brit. Army in India, and his various writings on Indian statistics and architecture are the fruits of a wide experience. His *Archaeological Survey of India* appeared in 1871.

Cunningham, Allan (1784-1842), poet and biographer, b. near Dalswinton, Dumfriesshire. He was apprenticed to his uncle, a builder, but in 1810 he went to London and wrote for the press. In the same year appeared *Remains of Nithsdale and Galloway Song*, pub. by Cromek, most of which were composed by C. In 1814 he became secretary to Sir Francis Chantrey, the sculptor. In 1822 he pub. his drama *Sir Marmaduke Maxwell*, and in the same year *Traditional Tales of the English and Scottish Peasantry*. In 1825 he ed. *The Songs of Scotland, Ancient and Modern*, and in 1829-33 he pub. *Lives of the Most Eminent British Painters, Sculptors, and Architects*, in 6 vols. His epic poem in 12 parts, *The Maid of Elvar*, appeared in 1833. In 1834 he pub. an admirable ed. of Burns's works in 8 vols., with a biographical preface containing many new

and interesting facts of the poet's life; this was followed in 1836 by *The Life and Correspondence of Robert Burns*. Just before his death C. had a paralytic stroke, the effects of which are obvious in *The Life of Sir David Wilkie*, pub. in 1843, after his death. C.'s songs were for the most part in the manner of Burns, and still retain some popularity. See D. Hogg, *The Life of Allan Cunningham*, 1875.

Cunningham, John (1819-93), church historian, whose fine scholarship renders his *Church History of Scotland*, 1859-82, an invaluable book of reference.

Cunningham, Peter (1816-69), author and editor, b. Pimlico, son of Allan C. (q.v.). Educ. at Christ's Hospital, he worked from 1834 to 1860 in the Audit Office. His chief pub. was a *Handbook of London*, 1849, to which later guides are much indebted. He wrote lives of Inigo Jones, 1848, and Nell Gwynn, 1852, and ed. the works of Drummond of Hawthornden and Johnson's *Lives of the Poets*. He also ed. his father's *Life of Sir David Wilkie*, 1843, and *Poems and Songs*, 1847.

Cunningham, William (1805-61), theologian. During the conflict preceding the foundation of the Free Church in 1843, C. threw himself heart and soul into the controversy, giving the whole force of a fine intellect and the full moral support of a splendid character to the non-intrusionist principles he had adopted. In 1847 he was appointed principal of New College, Edinburgh. A founder of the Evangelical Alliance, he was moderator of the General Assembly in 1859.

Cunningham, William (1849-1919), theologian and political economist, b. Edinburgh, educ. at Edinburgh Academy and Cambridge. He was chosen Hulsean lecturer in 1885, and in 1899 gave a course on economic hist. at Harvard Univ. Became Archdeacon of Ely, 1907. Among his valuable textbooks and hist. may be cited *The Growth of English Industry and Commerce*, 1882, 1925-9; *Use and Abuse of Money*, 1891; *Western Civilisation*, 1894; *English Industrial History*, 1895; *Modern Civilisation*, 1898; *Rise and Decline of Free Trade*, 1904; *Growth of English Industry and Commerce in Modern Times*, 1907; *Cure of Souls*, 1908; *Christianity and Social Questions*, 1910; *Cure against Free Trade*, 1911; *Efficiency in the Church of England*, 1912; *Christianity and Economic Science*, 1914; *English Influence on the United States*, 1916; *Progress of Capitalism in England*, 1916; and *Increase of True Religion*, 1917.

Cunningham of Hyndhope, Sir Andrew Browne Cunningham, 1st Viscount (1883-), admiral, son of Prof. D. J. C. and brother of Sir Alan Gordon C. (q.v.). Educ. at Edinburgh Academy, Stubington House, Fareham, and H.M.S. *Britannia*. Entered R.N. 1898 as a midshipman on cruiser *Doris*, which operated off S. Africa during the Boer war. Before he was 30 he was in command of his own ship, the 900-ton *Scorpion*. Won distinction in the Gallipoli campaign, 1915. Commanded a destroyer in the Dover patrol. As a rear-admiral commanded destroyer fleet in the

Mediterranean, 1933-6. In 1937 he was made vice-admiral in command of the Mediterranean battle cruiser squadron, and second in command of the Mediterranean fleet. Lord commissioner of the admiralty and deputy chief naval staff, 1938-9. Famous for his brilliant aggressive strategy in the Second World War, in which he began his war service in command of the first cruiser squadron in the Mediterranean and then, from Oct. 1939, in the N. Sea, where his ships took part in the N. patrol, blockading Germany. His flagship, *Droonshire*, brought King Haakon and the Norwegian Gov. to Britain, after playing a gallant part in the ill-starred campaign in Norway. The Fr. Foreign Legion, whose forces he landed there, and subsequently took far S. to Duala after the ill-planned venture at Dakar (q.v.), bestowed a much-valued honour for his leadership. Under his direct command as commander-in-chief Mediterranean fleet were the naval forces, both surface vessels and fleet air arm, which crippled Italy's fleet at Taranto, the battle of Calabria, and the battle of Cape Matapan (q.v., and see also NAVAL OPERATIONS IN SECOND WORLD WAR). Made admiral, G.C.B., 1941. Was in general command of the immense convoy of more than 800 vessels which landed the Brit.-Amer. expeditionary forces on the Algerian and Moroccan coasts on 8 Nov. 1942. In the matter of transporting, supplying, and maintaining the enormous invasion forces in many parts of the world he proved a great Fourth Sea Lord. Head of the Brit. Admiralty delegation to the U.S.A., 1942. Promoted admiral of the fleet, Jan. 1943. As commander-in-chief Levant he mounted a great part of the assault forces for the attack on Sicily at a time when the R.N. in the E. Mediterranean was heavily engaged in the Dodecanese operations. It was he too who planned and commanded the—brilliantly successful Auzio landing and the still greater undertaking—the assault on the S. of France in Aug. 1944. From 1943 to 1946 he was First Sea Lord and chief of the naval staff at the Admiralty. He was created a baron in 1945; viscount, 1946. His autobiography *A Sailor's Odyssey* was pub. 1951.

Cunninghame Graham, Robert Bontine (1832-1936), travel and fiction writer, b. London, son of a Scottish laird. He was brought up by a Sp. grandmother and then went to Harrow, but before he was 17 he went to the Argentine and travelled in S. America. In 1879 he married a Chilean poetess, Gabriela de la Balmondière. In 1884 his father d.; he inherited the family estate of Ardoch in Dunbartonshire, settled there, and entered politics. From 1886 to 1892 he was M.P. for NW. Lanarkshire, and along with Keir Hardie (q.v.) he organised the Scottish Labour Party: in 1887 he was imprisoned for leading the mob in the Trafalgar Square riots. In 1897 he went exploring in Morocco and for a time was a prisoner of one of the kaid's there. In

1928 he became the first president of the Scottish National Party. He d. in Buenos Aires. Looking always like a Sp. don, he was of the same line of adventurous travellers as Burton and Doughty. His travel books include *Mogreh-el-Acksa*, 1898, which tells of Morocco, *El Rio de la Plata*, 1914, and *Cartagena and the Banks of the Sinu*, 1920. *A Vanished Arcadia*, 1901, is a hist. of Paraguay. He also wrote some biographies, but was best known for his stories and sketches, vols. of which are *Thirteen Stories*, 1900, *Success*, 1902, *Faith*, 1909, *Hope*, 1910, *Charity*, 1912, and *Scottish Stories*, 1914. See H. F. West, *A Modern Conquistadore*, 1932; A. F. Tschiffely, *Don Roberto*, 1937.

Cunninghamia, genus of evergreen conifers, family Pinaceae, of 3 species, 2 only being in cultivation: *C. lanceolata* (synonym *sincensis*) of China grows to 150 ft. and is prized for its light, durable, fragrant wood, used by the Chinese for coffins; and *C. konishii* of Formosa, which grows to 80 to 100 ft tall; neither is fully hardy outdoors in Britain.

Cunobelin, Brit. king (fl. AD 40) of the Trinovantes, father of Caractacus (q.v.). Coins bearing his name have been found. His cap. was at Colchester (*Camulodunum*). He seems to have been the original of Cymbeline who appears in Shakespeare's play of the same name, in which he is the father of Imogen.

Cunoniaceae, sub-tropical family of shrubs and trees, about 120 species; leathery, evergreen, opposite or whorled leaves, small flowers, and 2-celled ovary; fruit a capsule, drupe, or nut. Genera include *Acrophillum*, *Cunonia*, *Weinmannia*.

Cup and Ring Marks are found on stone monuments and on portable objects over a very wide geographical area from India to Ireland. They have magic or ritual significance, and are often thought to be stylised or very degenerate representations of the human form. Many occur on Irish megaliths and cists and others are known in Scotland; it would appear that both are connected with early prehistoric metal-working in the N. of Spain, for exactly comparable markings are seen on the Iberian megaliths.

Cupar, or **Cupar-Fife**, royal, municipal, and police burgh and the co. tn of Fife, Scotland, on the lt. Eden, 10 m. SW. of St Andrews, 30 m. NNE. of Edinburgh. Its chief industry is linen-weaving, and there is a beet sugar factory and a large corn mrlt. The chief buildings are the tn hall, corn exchange, and Duncan Institute. The anc. seat of the Macduffs, earls of Fife, is now a school. In front of it in 1552 there took place one of the earliest performances of Sir David Lyndsay's *Ané Sayer of the Three Estates*. Pop. 5400.

Cupellation, process for the separation of precious metals from lead, in which the alloy is heated on a cupel (hearth of porous, refractory material like Portland cement or marl) in air, whereby the lead is oxidised and removed as litharge, and the precious metal left behind. See also ASSAYING.

Cupid (Lat. *cupido*, desire), or Amor, Rom. name for the god of love (Gk *Eros*). He is generally represented as a winged, naked boy, joyous and mischievous, with bow and arrows, and sometimes a torch and quiver, and blindfolded. The arrows he aimed at the hearts of both men and of the gods to kindle them into love. He was the son of Venus by Mars, Jupiter, or Mercury. For C. and Psyche, see PSYCHE.

Cupola (It., from Lat. *cupula*, small vault or cask), in architecture, a hemispherical vault or dome. In domestic architecture a C. is generally of glass.

Cinchona cuprea, a tree of S. America. From the same bark quinine is also obtained, the C. being separated from the mixture of the 2 alkaloids by treatment with ammonia and boiling ether.

Cupressus, see CYPRESS.

Cura, or Ciudad (Villa) de Cura, in in Aragua state, N. Venezuela, 50 m. SW. by W. of Caracas, almost destroyed by an earthquake in 1900. It is an agric. and stock-raising centre; copper is found locally. It was founded 1730 by Juan de Bolívar. Pop. 13,000.

Curaçao, or Curaçao, most important of the Dutch W. Indian Is., or Dutch Antilles,



P. H. Hiss: Netherlands Information Bureau

CURAÇAO: THE BEACH AND TOWN OF WEST POINT

Cupping, obsolete remedial measure designed to relieve inflammation by blood-letting. In dry C. the blood is withdrawn from deep-seated regions to the surface. In wet C. the blood is withdrawn from the body through a number of incisions made by a special instrument. The apparatus used is a glass cup with rounded or roughened edges, designed to adhere to the skin. The glass is heated by being warmed in a flame or by burning spirit within it. It is applied while hot and the subsequent cooling causes a contraction of the contained air which so diminishes the surface pressure that the blood is drawn from the lower vessels to the skin.

Cupreine, alkaloid in the bark of

lying 40 m. from the N. coast of Venezuela. C. is 37 m. long by 7 m. wide, and has a total area of some 174 sq. m. The soil is largely unproductive: sisal, citrus fruits, and divi-divi are cultivated in some fertile tracts, and salt, phosphates, livestock, and straw hats are exported. C. liqueur was originally made here from a special variety of orange found on the is. The leading industry is now petroleum, centred on Willemstad which lies on Sint Anna Bay, and is the cap. not only of C. but of the neighbouring is. of Aruba, Bonaire, St Eustatius, Saba, and the S. part of St Martin (the N. part of which belongs to France). These is., together with C., form the Dutch Antilles (see WEST INDIES). C. was discovered by

Spain in 1527, but has been held by the Dutch since 1634, except for a short interval during the Napoleonic Wars when it was in the hands of Great Britain. The official language is Dutch, but Spanish, English, and a lingua franca, Papiamentu, are also spoken. Pop. of the whole ter. 150,000 (C. 95,000). See K. Martin, *West-Indische Skizzen*, 1887; de Veer, *La Colonie de Curaçao*, 1899; and P. H. Hiss, *Netherlands America*, 1944.

Curaçao, see LIQUEUR.

Curare, **Curara**, or **Urari**, vegetable extract obtained from *Paullinia curare* and members of the Strychnos family. It is used by the natives of S. America as an arrow poison. Its active principle is curarin, and it has been used hypodermically in hydrophobia and tetanus. It is a dangerous drug, causing paralysis of the motor nerves and eventually death through paralysis of the respiratory organs.

Curassows, or **Cracidae**, family of birds belonging to the order Galliformes, sub-order Galli. They are found in tropical America from S. Texas to N. Argentina, where they inhabit forests within reach of the coast or wooded hills near rivers. They live on leaves and fruit. The nests are carelessly constructed on the level branch of a tree or bush. The C. vary in colour from black to blackish-green. The *Penelopinae* are brown or olive-green in colour and number 15 species. The *Oreophasianae* contains only the Guatemalan pheasant, a splendid bird with soft greenish-black plumage, brown at the side and below. The feet are vermilion.

Curate (from the Lat. *curare*, to care for), originally 'one with a cure of souls,' i.e. souls in his charge. In former times benefices were sometimes entrusted to religious houses, which might transfer them to laymen. Such laymen were styled impropriators and had to get a licence of the ordinary to allow a priest to take over the cure or par. in question. These clerks were called perpetual C.s, because the impropriators could not remove them, but an Act of Parliament of 1863 allowed all perpetual C.s to use the title of vicar. The incumbent in a par. where the tithes are impropriated and no vicarage has ever been endowed is still legally a perpetual C.; he is not removable, and the impropriators are under the necessity of maintaining him. On the Continent (cf. Fr. *curé*, It. *curato*, etc.) the word corresponding to C. is the title of the par. priest. In England the word used to be applied to deputies for incumbents who never visited their parishes but the word has now come to mean an unbeneficed clergyman, i.e. really an assistant C. The bishop of the diocese licenses and admits the C. to the par., and assesses the amount of his salary.

Curator (Lat., one who has charge of a thing—a guardian), in Rom. law the guardian or caretaker of a person over age who for some reason—for instance, if he be a spendthrift or of unsound mind—is unable to take charge of his own affairs. In civil law a C. is the guardian or caretaker of the property of a minor.

Under the Rom. Empire the title was given to those who occupied public official positions of trust. In modern times the name is generally given to the caretaker of a museum or public gallery, but it is still retained with something of its old significance at the univ.

Curb, term used in masonry to describe any fence or wall designed to keep a mass of earth in its place. It is applied to various enclosing borders, being originally limited, as the word itself suggests (curb from Lat. *curvus*, crooked), to the framework or border of something circular. Thus it is still used of the framing round the top of a brewer's copper, of the cylindrical ring of iron or wood forming the foundation of a brick shaft, and of the wall or coaming round the top of a well. But its most common application is to the stone or other durable material placed edgewise along a sidewalk to separate it from the road, and to form a finish to the path or pavement.

Curb, in horses, see HORSE (DISEASES).

Cureuma, genus of Zingiberaceae. *C. angustifolia* is a native of the forests of India and *C. leucorhiza* grows in the forests of Bahar. From the tubers of both species E. Indian arrowroot is obtained. *C. longa*, the common turmeric, is cultivated all over India, and also very largely in China; the Chinese sort is more esteemed for its superior richness in colouring matter. The rhizome of this plant is dried and then ground, when it yields the yellow dye known as turmeric. *C. zedoaria*, the broad-leaved turmeric, has aromatic tubers used by the Hindus as a stimulating condiment, as a medicine, and as a perfume. Colic, cramp, and torpor are some of the diseases it alleviates in the E.

Curel, François de (1854–1928), Fr. dramatist, b. Metz. Being descended from a wealthy family, he was able to devote himself to literature. His first plays, *L'envers d'une sainte*, 1892, *Les Fossiles*, 1892, *L'Intruite*, 1893, were produced with success by Antoine at the Théâtre Libre. The majority of his dramas are problem plays, although he never deals with abstract ideas, but with the passions and conflicts aroused by the ideas. His greatest popular success was *L'Âme en folie*, 1920; but his more characteristic plays, such as *La Nouvelle Idole*, 1899, *La Fille Sauvage*, 1902, *Le Coup d'aile*, 1906, found perhaps more favour with the critics than with the general public. He was elected to the Fr. Academy in 1919. His *Théâtre complet* was pub. in 6 vols. in 1919–24. See P. Blanchart, *F. de Curel*, 1924; E. Ponier, *La Vie et l'œuvre de F. de Curel*, 1934.

Curepipe, favourite and fashionable residential quarter, connected by rail with Port Louis, and situated at an elevation of some 1850 ft in the interior of the is. of Mauritius. Pop. 28,000.

Cures, Sabine city, 25 m. from Rome, on the l. b. of the Tiber, legendary bp. of Numa. It was probably destroyed by the Lombards in AD 589, but the site remains, namely a hill with two peaks, which were crowned formerly by the citadel and

neopolis respectively. It was from C., so the story goes, that Titus Tatius led to the Quirinal the Sabines, with whom the Romans, in time coalesced to form the Quirites.

Curetes, demigods in the is. of Crete, to whom Rhea entrusted her son, the infant Zeus, when fleeing from the wrath of her husband Cronus. They were honoured in Greece with Pyrrhic dances. The name was also given to the priests of Rhea, and, when she was identified with Phrygian Cybele, to her eunuch Corybantes (q.v.) or Galli.

Curfew (Fr. *couvre-feu*). The custom of ringing a bell at sunset in summer and eight o'clock in winter to warn all householders to extinguish their lights and fires is said to have been introduced into England from the Continent by Wm the Conqueror, but it probably existed in England earlier. It was probably not intended as a tyrannical decree, but was a caution against leaving fires burning at a time when all houses were built of wood. The formal practice of ringing a bell at a stated hour is still continued in some dists. It is still resorted to in periods of civil unrest as, e.g., in Cyprus during the E.O.K.A. disturbances, 1956.

Curia Muria Islands, see KURIA MURIA.

Curia Regis, or **Aula Regis**, king's council, estab. at the Norman Conquest. It was at first much the same as the committee of the *commune concilium*, known as the permanent council or *concilium ordinarium*. The C. R. gradually, however, assumed a position distinct from this council or committee owing to the continuity of its existence—whence its alternative name, continual council—and to its members being available for consultation at any moment, instead of at only three stated periods in the year, as in the case of the national council. By degrees the term C. R. or *aula regis* began to be used to denote the king's council in its capacity of a supreme court of justice with the king at its head, and in the reign of Henry I appear traces of a definite organisation and staff. The C. R., which at this time always followed the king, was occupied at first more especially with financial business, in which capacity it was called the Exchequer (q.v.). Its members were the great officers of the household, such as the constable, chamberlain, steward, marshal, and butler, and such officials as the justiciar and chancellor and treasurer, who were appointed by the king to help carry on the work of government. In its judicial capacity the C. R. acted as a court of appeal from the local courts and as a court of first instance in cases in which the powerful tenants-in-chief were concerned. The C. R. also was in close communication with the local courts by means of its travelling justices who, in Henry I's reign, began to make circuits of the country for the purposes of finance and justice. In 1178 the increased business of the C. R. had caused the number of judges to become so large that the king appointed five of them to sit regularly *in banco* to hear all complaints

and to transact all the business which subsequently fell to the three courts of common law, while at the same time the appellate jurisdiction was transferred to the *concilium ordinarium*. This limited body of judges was the origin of the courts of king's bench and common pleas. The system was slightly modified in 1179. The C. R. still continued in theory, though not in practice, to transact its business in the presence of the king and continued to follow him, to the great inconvenience of all concerned, and was shortly after broken up into the three courts of common law, namely the court of exchequer, court of common pleas, and court of king's (now queen's) bench.

Curia Romana, name used to denote the collective judicial and administrative institutions by means of which the pope carries on the general government of the Church. It is also used in a secondary sense, to mean either the persons who form part of the general government of the Church or the Holy See itself. There is no separation of powers in the C. R., each dept, besides performing the business entrusted to it, having a share in the legislative, judicial, and administrative power. All depts derive their powers directly from the pope, and exercise them in the papal name, while the pope is responsible officially for all the acts of the C. R. The decisions of some depts must in nearly every case be referred to the pope for his ratification, but there is not the same necessity for ratification in others. Acts performed directly by departmental heads are generally called Acts of the Holy See, while those of the pope himself are designated Pontifical Acts, e.g. bulls, briefs (q.v.), and encyclicals. In all cases, however, the disciplinary authority is the same, though Acts which concern individuals have not the force of general law.

The component parts of the C. R. are (1) the tribunal and offices, and (2) the permanent commissions of cardinals, known as the Rom. Congregations. The former have been in existence for centuries, but the latter, though of much later institution, have taken precedence, and now perform a great many of the transactions formerly in the jurisdiction of the former. The Congregations consist of the highest dignitaries of the Church, and are practically subdivisions of the Consistory, in which latter council the entire Sacred College takes part. The old machinery of the eccles. administration of the tribunals and offices still exists, but the prelates who once were at the head of these depts have been replaced by cardinals. The tribunals are (1) the *forum internum*, the Penitentiary, (2) the Rota (*forum externum*), and (3) the papal Signatura, the two latter being for judicial matters.

The offices are (1) the Chancery which sends out papal bulls, (2) the Apostolic Dataria, which transacts matters of grace, like nominations to benefices; (3) the Apostolic Chamber, which administers the property of the Holy See; (4) the papal secretaries, the chief of whom, the cardinal secretary of state, deals with

the political affairs of the Church; (5) the pontifical family, of domestic prelates of the household, one of whom presides over the arrangement of audiences, while another revises books pub. at Rome; and (6) the pontifical chapel, or papal court for religious worship.

Curicó: 1. Small central prov. of Chile, stretching from Argentina (Mendoza) to the Pacific, between the provs. of Talca and Colchagua. Except for salt deposits on the coast, minerals are as yet undeveloped. Irrigation has greatly assisted agriculture, and vines, wheat, and barley are cultivated. Area 2214 sq. m.; pop. 89,391.

2. Tn, cap. of above prov., situated on the Mataquito R. 114 m. SW. of Santiago. It is an agric. centre with a cattle trade, flour milling, and distillery. There is a very fine main plaza. Pop. 19,200.

Curie, Marie (Marya Skłodowska) (1867–1934), physicist and chemist, b. Warsaw,



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MADAME CURIE

daughter of Prof. Skłodowska. Educ. at the Lyceum of Warsaw; went to Paris and studied with Pierre C. (q.v.), whom she married in 1895. It was she who carried out the many experiments necessary to obtain the atomic weight of radium, the element they had jointly discovered. She succeeded her late husband as prof. of physics and director of the physical laboratory at the Sorbonne in 1906, being the first woman prof. to be appointed to that univ. Besides the honours gained in common with her husband, she obtained the medal of the Royal Society of Arts (England) in 1910, the Nobel prize for chem. in 1911, having already shared with her husband and Henri Becquerel the Nobel prize for physics in 1903. She visited the U.S.A., and her admirers there raised a fund with which they purchased a considerable portion of radium so that she could more easily carry on her investigations. The Marie Curie Skłodowska Institute of Radiology was opened in Warsaw in 1932. Pubs.: *Recherches sur la propriété magnétique des aciers trempés*,

Recherches sur les substances radioactives, 1903; *Traité de radioactivité*, 1910; *Les Progrès de la physique moléculaire*, 1914; *La Radiologie de la guerre*, 1921; *Radioactivité et phénomènes connexes*, 1923; *L'Isotopie et les éléments isotopes*, 1924; and *Pierre Curie*, 1924. See *Eve Curie, Madame Curie*, 1935 (Eng. trans. 1938).

Curie, Pierre (1859–1906), Fr. physicist, b. Paris, was educ. at the Sorbonne, Paris, where from 1900 he held the chair of physics. In time he was chosen as *chef des travaux* at the school of physics and chem. in Paris, and in 1895 was appointed prof. at the same institution. In his earlier years he carried on some valuable research into piezo-electricity and the magnetic properties of substances at various temperatures. But his greatest service in the field of science was the discovery of two new elements, polonium and radium. Already, in 1896, Henri Becquerel had pub. his observations on the radioactivity of uranium—a property manifested in a still higher degree by the compound known as pitchblende. M. and Mme C. (see CURIE, MARIE)—for his wife took a full and equal share in the whole of C.'s laboratory work—immediately began to subject pitchblende to fractionation, hoping thereby to bring to light some hitherto unknown substance which must be radioactive to a still greater extent than uranium. Their hopes were fully realised, and resulted in the discovery of radium and its transformation product, polonium. In 1903 the C.s received the Davy medal of the Royal Society and also half of the Nobel prize for physics, the other part being awarded to Becquerel. A year after his election to the Academy of Sciences (1905), C. was killed by a dray which ran over him. His investigations were pub. in the *Journal de Physique et le Radium, Annales de Physique*, and other scientific records.

Curie, a unit of radioactivity (q.v.) initially defined (1910) as the quantity of radon found in equilibrium with 1 gm of radium. Careful measurements indicated that this was 0.66 mm³ at normal temp. and pressure, and was associated with 3.7×10^{10} disintegrations per sec. This number is a more convenient unit and in 1948 it was agreed to define the C. as that quantity of any radioactive substance which suffers 3.7×10^{10} disintegrations per sec. The millicurie (mC) and microcurie (μ C) are one thousandth and one millionth of the C. respectively.

Curio, Gaius Scribonius: 1. Rom. politician; consul in 76 BC. As governor of Macedonia (75–73) he led a successful expedition against the Dardanians, and was the first Rom. general to reach the Danube. C. d. in 53 BC.

2. Son of the above, transferred his allegiance from Pompey to Caesar after his tribuneship in 50 BC. After mustering troops for Caesar in Umbria and Etruria on the outbreak of civil war, he more than held his own against the Pompeians in Sicily (49), and was finally slain by Juba, the Numidian king, whilst crushing the Republican cause in Africa.

Curisches Hafl, see KURISCHES HAFF.

Curitiba, or **Curityba**, city and cap. of the state of Paraná, Brazil. Situated on a pleasant plateau, 3000 ft above the sea, it is watered by the Iguaçu, an affluent of the Paraná, and is connected by rail with its seaport, Paranaguá, 50 m. to the E. There is a univ. (founded 1912), theatre, and library, and large Ger., It., and Slav. colonies. Its staple exports are maté tea, coffee, and timber; industries include paper, furniture, textiles, tobacco, sugar, etc. Pop. 141,350.

Curium, see TRANSURANIC ELEMENTS.

Curius Dentatus, Manius, see DENTATUS.

Curlew, shore bird of the genus *Numenius*. It is found in the Old World, and is remarkable for its very long and decurved bill, and its elongated legs. It breeds especially on moorlands, the nest being quite exposed. The plumage is pale brown, with dark bars, the under and lower parts being mainly white. It is found on Brit. shores from autumn to spring, and feeds on insects, worms, and berries.

Curling, game like bowls, played on ice; it has been a popular Scottish sport during the last 3 centuries and has now found a home in most parts of the world where the climate is favourable, especially Canada and Switzerland. The stone, which takes the place of the bowl, is a block of granite or whinstone rounded to the shape of a Dutch cheese and polished smooth. On the top is an iron handle by which the player grips it. The stone may be thrown in various ways, according to the direction in which the player wishes to send it. The weight varies from 35 to 40 lb., but 44 lb. is the maximum allowed. By giving it a rotary motion to a greater or less degree it may be made to go in more or less of a curve, hence the name 'curling.' The place of the jack at bowls is taken by a fixed mark called the tee. The ice is swept clean and 2 tees are constructed, 38 yds apart, 1 at each end of the rink. With the tee as centre, a circle of 7 ft radius is then drawn at each end. Behind each tee a line is drawn back from the tee to a distance of 4 ft, these being called the *centrallines*. At the hinder extremity of the central lines *foot-scores* are drawn at right angles to them, 18 in. long, on the left hand on the central line as one faces the tee. With part of the foot-score as diameter and with their centres 6 in. from the central line, small circles 3 in. in radius are drawn. On these players must place their left feet when casting their stones. The scoring is as in bowls. Those stones which are inside the tee circle and nearest to the tee count for the score, and a game consists of a number of 'heads' or 'ends,' after each of which the players change ends. Seven yds from each tee a wavy line is drawn, known as the hog-score, and any stone which does not cross this is called a *hog* and removed from the rink. Midway between the tees a straight *middle* line is drawn. The rink having been prepared according to the above rules, each side chooses its captain or *skip*. A side generally consists of 4 players with 2 stones apiece, and the skip is an autocratic director, giving minute direction

to the other players where they must send their stones. The leader is generally directed by his skip to send his stone straight towards the tee, but on no account to go beyond it. The skip of the opposing side may then direct his 1st player either to send down a shot to remove his adversary's stone, or to try to get his own stone nearer. The 2nd and 3rd players are similarly told exactly what to do. The skip generally plays last, though this is not obligatory, and he himself is directed by a player, generally the 3rd, whom he has picked out for this purpose. As a rule when one good shot has been made it is customary for the following players to be directed to lay their stones as *guards* to protect this one. All the players are provided with brooms and a right judgment in 'sweeping' (sweeping) forms no small part of the skill of the game. The broom is used to sweep away any particles of ice or snow that seem likely to impede the progress of the stone, and is used only on the skip's orders. The player's party may sweep from the middle line to the tee, so long as they do not disturb either the running stone or any of those at rest. An umpire is generally chosen to settle disputed points. The rules for C. are made and issued by the Royal Caledonian C. Club.

Much effort has been exerted to find the origin of the game, but it seems impossible finally to settle this point. The balance of opinion inclines to give it a Dutch or Flemish origin, but there are many references to the game in the early 17th-cent. Scottish records. Camden in 1607, speaking of the Orkney Is., says, that they supply 'plenty of excellent stones for the game called curling.' The game at first bore a much closer resemblance to *quoits* than it at present does. It was for a long time known as *coiling* or *kuling*, and the old name still survives in many parts. At this time the stones were much smaller, weighing only a few pounds, and the impulse was given by the fingers, to receive which a small hole was made in the top of the stone. Then for a short time the stones were of enormous weight, 70 or 80 lb. each, and slaying was not carefully attended to. With an increase in the symmetry of the stones came a decrease in their size. In 1834 an attempt to revive the ancient sport was made by the Amateur C. Club of Scotland, attended with but little success. In 1838 the Grand Caledonian C. Club was formed on more professional lines, and this club, which took the title of Royal from Queen Victoria in 1842, extended the game to Canada and the U.S.A., where it is played under slightly different conditions. See J. Ramsay, *An Account of the Game of Curling*, by a Member of the Duddingston Curling Club, 1811; J. Taylor, *The History of Curling, and Fifty Years of the Royal Caledonian Curling Club*, 1890; and J. G. Grant, *The Complete Curler*, 1914.

Curlil, Edmund (1675-1747), notorious London bookseller, b. London. He is responsible for the origin of the word *Curlicism*, having achieved a reputation for issuing obscene literature. He lived

chiefly by piratical publishing, and Arbuthnot said of his biographies that they added a new terror to death. He quarrelled, in 1718, with Alexander Pope, the poet, in consequence of which Pope pilloried him in his work, the *Dunciad*.

Curly Coated Retriever, see RETRIEVER.

Curragh, see CORACLE.

Curragh, The, a large unenclosed plain in co. Kildare, Rep. of Ireland. The C. is the headquarters of Irish racing.

Curragh Incident, name by which the dramatic and unexpected gesture made at C. Camp by Gen. Hubert Gough (q.v.) and other officers under his command came to be known. On 20 Mar. 1914 they tendered their resignations as a protest against the likelihood of being sent to enforce Home Rule upon N.E. Ulster. This action caused the Brit. Gov. to give up all idea of coercing Ulster into Home Rule, at any rate for the time being. The officers in question subsequently had their commands restored to them. See also HOME RULE. See A. P. Ryan, *Mutiny at the Curragh*, 1936.

Curran, John Philpot (1750-1817), Irish judge and orator, won in 1769 a sizarship at Trinity College, Dublin. He was called to the Irish Bar in 1775, and in 1782 he was created king's counsel; in the following year he entered the Irish Parliament as member for Kilbeggan. A staunch support of Grattan, his fervid and sarcastic speech nevertheless failed to secure for him in the House that pre-eminence which he enjoyed in an Irish court. C. was a convinced Protestant, but when the oppressed Catholics of his country were goaded at length to open rebellion, he threw himself wholeheartedly into the defence of their leaders in the series of state trials which followed. Thus he exerted himself to save Archibald Rowan (1794), the Rev. Wm Jackson (1795), Peter Finnerty (1797), the brothers Sheares (1798), Napper Tandy (1800), and a host of other victims of gov. persecution. C.'s last years were darkened alike by the political outlook and by domestic troubles. The union, which he had prophesied would be 'the annihilation of Ireland,' was to the last degree abhorrent to him; his wife eloped with a clergyman, and Sarah, his daughter, d. in Scilly after the execution of her lover, Robert Emmet, who rebelled in 1803. From 1806 to 1814 C. served the Whig Gov. as master of the rolls in Ireland.

Currant, term applied properly to species of *Ribes*, a genus of Grossulariaceae which flourishes in N. lands and has four representatives in Britain. *R. rubrum* is the red C., a plant remarkable for the mixture of sweetness and acidity in its fruit and for the beauty of its semi-transparent red or yellow berries. *R. nigrum* is the black C., in the fruit of which a powerful and agreeable aromatic principle takes the place of acidity. *R. sanguineum*, the flowering C., is well known in Brit. shrubberies for its beautiful pendant racemes of flowers, which are white when very young, and gradually become rose-coloured. The C.s sold in grocers' shops are the dried berries of a small kind of

grape which is cultivated chiefly in the is. of the Mediterranean and in Corinth, the word C. being a corruption of the name of this tn. Various plants of different genera and orders are named C.-trees and C.-bushes, but they bear no true resemblance to species of *Ribes*.

Currant Wine, inferior vintage made from a seedless variety of the *Vitis vinifera*, or grape-vine, which is cultivated chiefly in Zante, Cephalonia, and Ithaca, and near Patras in the Morea. The fruit is grown on the lower hills and in the valleys, the higher slopes being left for the cultivation of the grape-vine.

Currency (Money), that which is current or in circulation, as a medium of trade. The word is generally applied to coins and what is termed paper money, comprising bills issued by authority and bank-notes, or notes issued by a gov. Money may be defined as the means by which 2 persons are enabled to enter into transactions. Some common measure of value must necessarily be adopted to facilitate exchange. Various substances have been used in different countries to serve as money, e.g. the Chinese formerly used cubes of tea, and auct classic nations used cattle. But as the precious metals, gold and silver, and in a lesser degree copper, have been for long the universal substances selected for the purpose by reason of the possession of their qualities of intrinsic value, durability, susceptibility to div., and portability, it is unnecessary to consider any other kinds.

The original meaning of the word coin was a wedge-shaped disk for stamping money. Etymologically, *coin* is a doublet of *coign*, from Lat. *cuneus*, wedge; the Fr. word means also 'stamp.' Neither the Bible nor Homer gives any evidence of the use of coins in very early times. Herodotus ascribes the invention of stamped money to the Lydians, and the *Parian Chronicle* to the Aegietans in the 9th cent. bc. Numismatic research points to the silver coins of Aegina, stamped with a turtle, as the most auct known, while those of Lydia probably come next, followed by the gold and silver Darics of the Persian Empire in the 5th cent. bc. Metal was very early used as a medium of exchange, but was weighed out by scales. The monetary systems of most European nations can be traced back to the pound of silver, still represented in the Eng. pound. A few instances are known of coins of other than circular shape, but convenience and the prevention of the depreciation of the coin by clipping or shearing portions from the edges have tended to the universality of the round metal disk. The integrity of the coin as regards weight is also protected by milled and raised edges, and by the inscriptions and designs on its surface; all of which make mutilation easily perceptible. The designs, etc. stamped on coins are usually symbols of the authority by whom they are issued, and the lettering confirms this and generally includes the date of issue of the coin. Among the numerous minor Grecian states, and in early medieval Europe, a tremendous number of coins

were made, separate coinages being issued not only by individual nations, but also by cities and even by families (see *also* **TOKENS and TRADE TOKENS**). Such local coinage was valid only within a restricted area, and the gradual centralisation of power led to the adoption of certain standard coins for international circulation.

In modern times the right to coin money is a State monopoly, and coins are issued of 2 kinds: standard, where the weight of metal is equivalent to the face value of the coin, and token, where the actual value of metal is less than the face value of the coin, as in the case of copper coinage. Gold, silver, bronze, and nickel are the chief metals used for coins. In Great Britain the silver coins are for 6d., 1s., 2s., and 2s. 6d. Threepenny pieces are occasionally seen, but the present 12-sided threepenny piece is a nickel-brass coin. The existing bronze coins are penny, half-penny, and farthing. Gold coins have disappeared. Five-pound and 2-pound gold coins are issued on special occasions; but the sovereign and half-sovereign were withdrawn from circulation during the early days of the First World War. The 5s. silver crown and the double florin have also been discontinued. In the Brit. Empire, New Zealand uses the Brit. coinage; Australia, S. Africa, and Eire use the same units, but with their own designs; Canada has the dollar and various cent pieces, and India the rupee. In Sept. 1946 the Brit. Gov. announced that the existing silver coinage was to be replaced by one of cupro-nickel. The process of withdrawal is to be made over a period of years, and for some years both types of coin will circulate side by side. The reason for the withdrawal is a world shortage of silver and the dearness of the metal. Further, Britain received about £75,000,000 worth of silver from America under Lease-Lend and that has to be repaid. In 1946 the price of silver was 4s. 7½d. an oz., compared with 2s. during the war. In 1920 the price of silver rose to such a height that the silver in a half-crown cost 3s. In those days our coins contained 92½ per cent of pure silver, but the gov. passed the Coinage Act of 1920, which reduced the silver content by nearly half. The old rich alloy, 92½ per cent, had been in use for 350 years. The coins that resulted from this reduction contained half silver and about half copper, and they turned red, green, and yellow. Some years later, however, the Mint changed the alloy again and called in the earlier coins. All the pre-1920 coins were called in too, but it was not until 1938 that the withdrawal was practically complete.

In addition to its function of acting as a medium of exchange, money performs the no less essential functions of serving as the measure of the value of all other substances and as a means for effecting credit (q.v.). The former policy of the laws and trade of Great Britain was to retain as much money as possible, and hence to discourage imports and encourage exports (see **CAPITAL; CUSTOMS**

DUTIES; and FREE TRADE). As a general rule it may be said that the value of money, that is to say its purchasing power, varies inversely with general prices. The complex industrial organisation of a country cannot be properly carried on unless there is at any given time an adequate quantity of money in that country. The value of money is regulated by the same laws as those which determine the value of other mineral produce: hence the causes which determine that value are, though complicated, reducible to the law of supply and demand. 'Supply' of money means the total amount of money in circulation at any given time, and 'demand' for money the total quantity of goods offered for sale. But the factor of supply is itself complicated by the varying rates of circulation, or what is termed the 'efficiency' of money. Furthermore, demand in this context is to be taken to indicate not so much the total quantity of commodities as the number of sales to which any particular article is subject before it ultimately gets to the hands of the consumer. The net result is that the value of money varies inversely with its total amount in circulation multiplied by its 'efficiency.' As men economise to the fullest possible extent the machinery of production, so do they economise as far as they can the machinery of exchange, or money. If actual money in the primary signification of current coin passed on every mercantile transaction, the trouble and difficulties of the social organism would be enormously increased; in all probability it could not be carried on at all as at present constituted. In a word, some system of credit has to be adopted (see **CREDIT**), and as a corollary civilised communities attain to the idea of what is known variously as paper money and representative money in the shape of bank-notes, promissory notes, and bills of exchange (which latter term legally comprises cheques). These paper instruments are therefore a substitute for money. In most modern countries that form of promissory note known as a bank-note is part of the ordinary C. Notes are made legal tender provided they are issued by the State or by a State bank. When once in circulation such notes discharge debts as completely as current coin, in spite of fluctuations in value; promissory notes issued by bankers may of course be refused as payment of a debt, and can only be circulated with the entire concurrence of those who receive them.

The outbreak of the First World War in 1914 necessitated an early departure from the C. practice which had been estab. for years in Great Britain. The Currency and Bank Notes Act authorised the Treasury to issue C. notes of the value of £1 and 10s. These were to be legal tender for any amount, the holder of a C. note being entitled to obtain on demand at the Bank of England, London, payment of the note at its face value in legal tender gold coin. Another provision of the Act was the power given to the Bank of England and to any Irish or Scottish bank to issue notes in excess of the limits fixed by the

law. For a very short period the Bank of England did exceed the issue limit of uncovered notes fixed by the Act of 1844. C. notes were obtainable by bankers from the Bank of England up to 20 per cent of their liability on deposit and current accounts. The first issue of C. notes by the Treasury was made in 1914, and the value of outstanding issues grew rapidly until 1920, when the figure against outstanding C. notes and C. note certificates was returned at £367 million. The great utility of the C. note issue was made manifest during the period 1914-18 covered by the First World War when the national finances had to be treated with marked care. The banks were able to meet continuous and increasing demands for C. by the public. The Bank of England was enabled to conserve the gold stocks in the country. Credit was extended and this led to inflation. The gov. found the issue of C. notes of the greatest use, inasmuch as it was provided with a loan of nearly £400 million to help to carry on the war. In 1918 the Cunliffe Committee was appointed to consider the problems which would arise in connection with C. and the foreign exchanges during the period of reconstruction. Among its recommendations were that an early return should be made to the gold standard and that gov. borrowings should cease at the earliest possible moment. It was also advocated that an adequate sinking fund should be provided out of revenue, so that there might be a regular ann. reduction of capital liabilities. The important recommendation was made that in order to reduce the C. note issue the actual maximum fiduciary circulation in any year should become the legal maximum for the following year. The committee also recommended that the principle of the Bank Charter Act, 1844, should be maintained, namely that there should be a fixed fiduciary issue beyond which notes should only be issued in exchange for gold. The Macmillan Committee on Finance and Industry, which was appointed in 1929, found, however, that the return to the gold standard had fallen short of expectations, and emphasised that the only purpose of a gold reserve was to meet deficits in international payments until equilibrium was restored. In 1931 there were heavy withdrawals of borrowed capital in a brief space of time, such withdrawals being met partly from gold and also from foreign C. held by the Bank of England, and partly from credits secured from Paris and New York. In consequence the National Gov., which succeeded the Labour Gov. in that year, introduced a Bill to suspend the gold standard; and the gold standard has never since been restored. The Monetary and Financial Commission of the World Economic Conference, 1933, resolved that it was in the interests of all that gold should be re-estab. as the international measure of exchange values, the time and parity being for each country to determine. It was realised that in modern conditions monetary gold was required not for internal circulation but as a

reserve against central bank liabilities and, above all, to meet external demands for payments caused by disequilibrium on the foreign account. In 1939 the amount by which the value of the Bank of England's gold reserve exceeded the total note issue was transferred to the Exchange Equalisation Fund (see GOLD AND DOLLAR RESERVES).

U.S.A. An attempt to provide a sound and uniform C. was made by the estab. of a U.S. bank in 1791, which was closed in 1811, and of a second in 1816, which was closed in 1832 owing to President Jackson's opposition. The bimetallic standard (the 'dollar,' without decision as to whether it was to be of gold or silver, having been made the unit) caused speculation in gold and silver coin, and in 1834 the ratio of coinage was changed from 15:1 to 16:1. Between 1837 and 1844 sev. state banks collapsed and Federal credit was so impaired that payment for land was ordered to be made in specie. Some of the states repudiated their public debts. Radical experiments ensued. An independent U.S. treasury was estab. in 1846, and also a sub-treasury. Treasury notes were made receivable for public debts, and selected cities were named as centres of deposit for gov. funds. In 1861 a panic occurred, specie payments being suspended, and in 1862 secretary Chase issued legal tender notes, founded on specie support (greenbacks), though owing to the rise of prices and depreciation of notes specie payment of notes was later suspended. In 1863 the National Bank system was estab.; a national C. was provided for, secured by U.S. bonds, the banks being allowed to issue C. up to 90 per cent of gov. bonds deposited. In 1869 occurred the gold panic of 24 Sept. due to the attempt of Jay Gould and others to corner the Amer. gold market. This was foiled when the gov. threw \$5,000,000 of gold into the mkt. The day of the break was known as Black Friday. In 1893, after a period of depression, a serious political agitation led by W. J. Bryan arose for the re-estab. of a bimetallic standard. In 1900 the Currency Act was passed, definitely making gold the standard, and creating more favourable conditions for national banks. The 1907 panic was followed in 1908 by the Aldrich Currency Bill, allowing banks to issue C. on security of other than gov. bonds. The Owen-Glass Bill in 1913 (the Federal Reserve Act), passed by Congress under the impulsion of President Wilson, was intended to replace the outworn system of the Civil war days. The Federal Reserve Banking system is under the control of a board of 7 directors, including the secretary of the Treasury, the comptroller of the Treasury, and 5 members named by the President of the U.S.A. Instead of 1 central bank there are 12 regional banks, located in important cities scattered all over the country. Banks holding state and not Federal charters may join, but are not compelled to do so. Each regional reserve bank is under control of 9 directors, under orders from the central board of 7, whose

headquarters are in Washington. Each regional bank is supplied with large gov. deposits and with its own very considerable reserves. At all times it can supply its member banks with all the money that is needed, especially in crop-moving time. These regional banks also issue paper money in the shape of Federal Reserve treasury notes which are legal tender. The object of President Wilson was to place the money power in the hands of the gov. itself and take it away from the Wall Street bankers, who had hitherto controlled the money market. The system showed its great value when the U.S.A. entered the First World War and the gov. was compelled to borrow huge sums from the people. The great panic and business depression of the winter of 1929-30, which extended up to the time of President Roosevelt's election in Mar. 1933, resulted from the huge stock speculation in which the Amer. public had indulged, from overproduction of manufactured goods, and from general bad economic conditions throughout the world, rather than from any inherent defects in the Federal Reserve Act. See also GOLD and DOLLAR RESERVES; MINT; MONEY; NUMISMATICS.

Currency, Foreign, see METROLOGY.

Currency Bonds, gov. bonds of the U.S.A., which are so called because they form part of the monetary system. They interchange with the notes of the national banks, as a security for which they are deposited by the gov. with the Treasury.

Current Electricity. About 1786 Galvani noticed that the leg of a frog contracted under the influence of a discharge from an electrical machine. He thought that it was due to some property of the animal. In 1800 Volta showed that this was not so, and also invented a pile known by his name. The Volta Pile consists of a series of little disks of zinc, copper, and paper moistened with brine, placed one on top of the other, starting with zinc and finishing with copper. This is really a primitive primary battery. Faraday was the first to show that the current got from such a pile is the same as an electrostatic current, save that the former is a huge quantity of electricity driven under a small difference of potential, whilst the latter is generally a small quantity of electricity driven under a very large difference of potential.

Magnetic effects of a current.—In 1820 Oersted discovered that a compass needle was deflected when brought near to a wire through which a current is passing. This showed that the current gave rise to a magnetic field surrounding the wire. The so-called Corkscrew Rule gives the direction of the magnetic field due to a current in a wire. The lines of force due to a current in a straight wire encircle the wire, such that the directions of the current and of the lines of force correspond to the directions of motion and rotation of an ordinary right-handed corkscrew. Ampère and Weber experimented on coils, and showed that they acted like magnets of the same shape and size as the coils, and of suitable strength. Thus, a long helical coil, called a solenoid, when

carrying a current and suspended so as to swing freely in a horizontal plane, sets like a magnet of the same length and shape. As the length of the solenoid is shortened, the length of the equivalent bar magnet is shortened also. Finally, for a single turn of wire the equivalent magnet is a disk magnetised perpendicularly to its plane. Such a disk is called a *magnetic shell*. If this single coil is held so that its face is perpendicular to the line of sight, and if the current appears to pass round the coil in the clockwise direction, then that face will have S-seeking polarity (Fig. 1). The opposite face will have N-

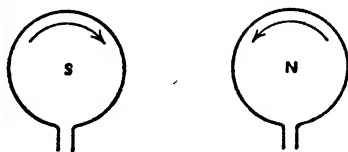


FIG. 1

seeking polarity. This relation between a magnetic shell and a coil carrying a current holds for a coil of any shape and size, the equivalent shell being of the same size and form as the coil and having its edge coincident with the wire carrying the current. The effect of a bar magnet at external points depends on its moment (see MAGNETISM). The strength of a shell is defined as the magnetic moment per unit area. The electro-magnetic unit of current can be defined as the current that is equivalent to a magnetic shell of unit strength. If 2 circular coils carrying currents are placed parallel to each other it is obvious that they will attract each other if the currents flow in the same direction, and repel if they flow in opposite directions. The potential (q.v.) of a magnet of moment M at a point distant r from the magnet is $\frac{M \cos \theta}{r^2}$

(where θ is the angle which the magnetic axis makes with the line joining the point and the centre of the magnet). Let S be the strength of a shell, i.e. magnetic moment, per unit area. Then V , the potential at a point, is equal to $\frac{S a \cos \theta}{r^2}$

(where a is the area). But $\frac{a \cos \theta}{r^2}$

is the solid angle subtended at the point by the shell. Thus $V = \Omega$ (where Ω is the solid angle). Unit current has been defined as equivalent to a shell of unit strength. Thus the magnetic potential due to a coil carrying a current, i , at a point is $V = i\Omega$. Consider a point, P , very near the plane of the coil on the side which has N-seeking polarity, and Q , a point on the opposite side of the plane. The solid angle subtended at P by the coil, or its equivalent shell, is 2π , and that at Q is -2π . Therefore the difference of potential between P and Q is $4\pi i$. Thus the work done in taking a unit pole

from P to Q by a path around the edge of the shell is $4\pi i$, i.e. the work done in taking a unit magnetic pole around a circuit once is $4\pi i$. It should be remembered that a unit magnetic pole is never found in nature. It is a useful fiction for theoretical discussion. Magnetic poles always occur in pairs, but electric charges are found singly.

Field inside a solenoid.—Let a unit magnetic pole be taken along PQ (Fig. 2)

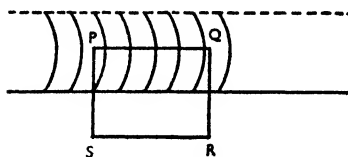


FIG. 2

parallel to and inside the solenoid. Then let it be brought out perpendicularly to PQ between the coils along QR, then along RS parallel to QP, and finally along SP, through the coils, back to P. The work done for each turn of wire is $4\pi i$; thus, if there are n turns in unit length, the work done is $4\pi ni$ (where $l = PQ$). The lines of force due to a solenoid are similar to those of a magnet, and are crowded inside the coil. If the coil is long, the number in the region of RS is small and the work done from R to S can be neglected. There is no work done along QR and SP because these lines are normal to the lines of force. Therefore, if H is the intensity inside the solenoid, Hl is the work done along PQ and is equal to $4\pi ni$. Thus $H = 4\pi ni$.

Field due to straight wire carrying a current.—Suppose the current is flowing along an infinite straight wire of which AB (Fig. 3) is a portion. Imagine a circle drawn around AB, and a unit pole taken around this circle. The lines of force surrounding AB are circles, since the magnetic field of the equivalent shell is perpendicular to the surface. The plane of these circles is perpendicular to AB. The work done in traversing the circle DEF with the unit pole is $4\pi i$. The intensity H is constant around the path since DEF is a line of force. Thus the work done is also $2\pi rH$. Therefore

$$H = \frac{2i}{r} \quad (\text{where } r \text{ is the radius of the circle}).$$

The electro-magnetic unit of current has been defined as that current flowing in a coil which has an equivalent magnetic shell of unit

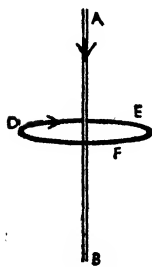


FIG. 3

strength. It may also be defined, in a more practical form, as that current which, flow-

ing in unit length of wire bent into an arc of unit radius, exerts unit mechanical force on a unit positive magnetic pole placed at the centre of the arc. Thus the force at the centre of a circular coil of radius

r is $\frac{2\pi i}{r}$ and is perpendicular to the plane of the coil. It can be shown that the force at a point P on the normal to the coil, through the centre O, is $2\pi i \frac{(r^2 + x^2)^{-3/2}}{r^2}$ (where $x = OP$). The practical unit of current is the ampere; 10 amps = 1 e.m.u.

Galvanometers.—See separate article for discussion of moving magnet, moving coil, ballistic and alternating current galvanometers. See also ELECTRIC METERS.

Electromotive force (E.M.F.) and resistance.—To produce a steady electric current in a wire it is necessary to maintain the ends of the wire at a steady difference of potential. A device to do this, such as a voltaic cell, is said to produce an E.M.F. The E.M.F. of a cell (in volts) is defined as the work (in joules) done by the cell in driving unit electric charge (1 coulomb) around a circuit that includes the cell as the sole source of E.M.F. A coulomb is the charge transferred per second by unit current (10 amps), and a v.-lt is 10^8 e.m.u. of potential (q.v.). If no energy is dissipated in the cell, the E.M.F. is measured by the potential difference (P.D.) across the cell, and this condition holds when the cell has negligible internal resistance and also when the current through the cell is negligibly small, e.g. when it is on open circuit. In 1827 Ohm found that the current strength in a wire is proportional to the applied P.D. Ohm verified this by showing that along a homogeneous linear conductor the rate of fall of potential is constant. If C is the current and E the electromotive force, then by Ohm's law $i = GE$ (where G is a constant known as the conductivity of the conductor). In

other terms $i = \frac{E}{R}$ (where R is a constant, called the resistance of the conductor, which depends on the nature, dimensions, and temp. of the conductor, see OHM'S LAW). It became possible at once to measure 2 resistances by applying the same electromotive force and comparing the currents produced. The unit of resistance must evidently be defined as the resistance in which unit E.M.F. produces unit current. If electro-magnetic units of E.M.F. and current are employed, the electro-magnetic unit of resistance follows. If practical units are employed, viz. the volt and ampere, then the practical unit of resistance, called the ohm, follows. The ohm is 10^9 times the electro-magnetic unit.

Resistance in series.—Suppose AB, CB (Fig. 4) are a number of conductors joined together in series. Let E_1, E_2 , etc., be the potential differences between the ends of the different conductors, r_1, r_2 their resistances. The current, i , must be the same for all, since

electricity does not accumulate. Therefore $i = \frac{E_1}{r_1} = \frac{E_2}{r_2} = \dots$. If R is the effective resistance of the combination, then $i = \frac{E}{R}$ where $E = E_1 + E_2 + \dots$. Thus $iR = (r_1 + r_2 + r_3 + \dots)i$.
 $\therefore R = r_1 + r_2 + r_3 + \dots$

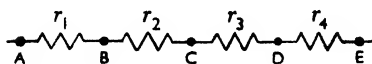


FIG. 4

Resistances in parallel.—Suppose the beginnings of all the conductors were joined together, and all their ends (Fig. 5). They are then said to be in parallel. The current, i , flowing in at A, must equal $i_1 + i_2 + \dots$, the sum of the currents

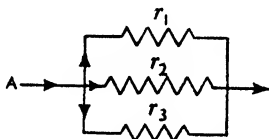


FIG. 5

in the resistances r_1, r_2 , etc. Now $i_1 = \frac{E}{r_1}, i_2 = \frac{E}{r_2}$, and so on, since the potential difference E between the ends is the same for all the branches.

$\therefore i = E \left(\frac{1}{r_1} + \frac{1}{r_2} + \frac{1}{r_3} + \dots \right) = \frac{E}{R}$. If R is the effective resistance of the whole combination. Thus $\frac{1}{R} = \frac{1}{r_1} + \frac{1}{r_2} + \frac{1}{r_3} + \dots$

Kirchhoff's laws allow a complete analysis of any complex network of conductors. They are: (1) *The algebraic sum of the currents which meet at any point is zero.* (2) *In any closed circuit the algebraic sum of the products of the current and resistance in each of the conductors in the circuit is equal to the E.M.F. in the circuit.*

Heating effects of electric currents.—The conversion of energy from an electrical form into that of heat takes place when current flows through a conductor, the incandescent lamp being a particular example, in which case approximately 95 per cent of the power is dissipated as heat and only 5 per cent converted to light energy. The power, in watts, dissipated by a circuit is the product of the current in amps, and the voltage in volts. This may be expressed by the expression $W = EI$. The energy, in joules, absorbed by this circuit in t secs. $= EIt = I^2Rt$, since 1 joule = 1 watt second. If no mechanical work is done, all this energy is transformed into heat, and in the process a certain amount of energy is expended. There is a relation between energy expended and heat produced; if

4.2×10^7 ergs, i.e. 4.2 joules, of work is done, a quantity of heat is developed sufficient to raise the temp. of 1 grm. of water by 1°C . This is known as the calorie or metric unit. The Brit. thermal unit or the Brit. heat unit is the quantity of heat required to raise the temp. of 1 lb. of water by 1°F , and is equivalent to 778 ft./lb. of work. Now I^2Rt is measured in joules, hence the quantity of heat (H) developed in t secs. in a circuit of which the resistance is R ohms and the current I amps is given by: $H = \frac{I^2Rt}{4.2} = 0.24 I^2Rt$ calories. This is known as Joule's law, and the heating as Joule's effect.

See also CELLS, VOLTAIC; GALVANOMETERS; WHEATSTONE BRIDGE; POTENTIOMETER; THERMOELECTRICITY; ELECTROLYSIS. Books for further reading are listed under ELECTRICITY AND MAGNETISM.

Currents, Oceanic, see ARCTIC, ATLANTIC, INDIAN, and PACIFIC OCEANS; GULF STREAM.

Currie, Sir Donald, see UNION-CASTLE LINE.

Currie, Sir William Arthur (1875-1933), Canadian general, b. Napperton, Ontario, Canada. He quickly came to the fore in the First World War, and proved himself an able administrator as well as general. He took the field in command of the 1st Canadian Div. in 1914, and then of the Canadian Corps in 1917. His many military decorations include the Légion d'Honneur, Grand Officier de l'Ordre de la Couronne de Belgique, the Fr. and Belgian Croix de Guerre, and Amer. Distinguished Service Medal. Principal of McGill Univ. from 1920 until his death. See life by H. M. Urquhart, 1950.

Curry, Indian dish, seasoned with C. powder or paste. C. is a concoction of pepper, ginger, turmeric, coriander, caraway, tamarind, and many spices and condiments, and has the power of stimulating appetite.

Curse of Scotland, nine of diamonds, which resembles the coat of arms of the Earl of Stair, who was partly responsible for the massacre of Glencoe in 1692.

Cursor, L. Papirius, distinguished Rom. general in the second Samnite war, was 5 times consul, and twice dictator (325 and 309). He frequently defeated the Samnites, but his greatest victory over them was gained in his second dictatorship. Although an able commander, he was not popular with his troops on account of his severity.

Cursor Mundi, 14th cent. verse homily of some 30,000 lines in N. M.E., purporting to give a hist. of the world from its creation to its ultimate destruction. The poem is based on Bible hist., but, in a very attractive manner, the author incorporates in the scriptural narrative any legendary story he may know, such as that of the *Three Trees*. The work was very popular but the author is unknown. See the ed. of Dr Morris, pub. by the Early Eng. Text Society.

Cursus, a prehistoric field monument the origin and purpose of which are not yet

known. It consists of a long and narrow area enclosed by small banks, and was so named by William Stukeley, the 18th-cent. antiquary, who thought that it was used in funeral races and ceremonies. There are several in the Thames Valley and in Wessex which have been located on air photographs, but the most famous is that at Stonehenge, the example known to Stukeley.

Curtain, term used in fortification with regard to the part of a rampart which connects one bastion with another. See **BASTION**.

Curtatone, It. tn, in Lombardy (q.v.), 4 m. W. of Mantua (q.v.). It was the scene of an Austrian victory over the Italians in 1848 (see **ITALY, History**). Pop. 9000.

Curtia de Arges, tn and episcopal see of Rumania, in prov. of Pitești, on the R. Arges, a trib. of the Danube. It was the cap. of Wallachia, 1330-83. The fine cathedral, dating from the 16th cent., is of great interest. There are sev. fine churches, including one built in 1512 by Prince Neagoe. Pop. 6500.

Curtsey (also *Courtesy*). The right of a husband to enjoy for life, after his wife's death, the freehold lands of which his wife was solely *seised* (i.e. possessed) in her lifetime, provided such issue of the marriage was *b.* as might by possibility inherit as the heir of the wife, made the husband, on the right accruing, *tenant by the C. of England*. From the passing of the Married Women's Property Act, 1882, tenancy of the C. only attached to lands of which the wife died intestate. Abolished in England in 1925.

Curtin, Andrew Gregg (1817-94), Amer. statesman, *b.* Bellefonte, Pennsylvania; was secretary to the commonwealth of Pennsylvania in 1855, and governor (Republican) 1860. During the Civil war he strongly supported Lincoln, and Pennsylvania, under C., furnished approximately 390,000 men to the N. army.

Curtin, John (1885-1945), Australian statesman, *b.* Creswick, Victoria, and educ. in state schools. Began work as a printer's devil. From 1911 to 1915 he was secretary of the Timber Workers' Union. During the First World War he became secretary of the Anti-Conscription League, and, in that capacity, came into conflict with the law and was imprisoned. From 1927 to 1928 he was editor of the *West Australian Worker*. In 1928 he was elected to the House of Representatives for Fremantle, and held the seat (except from 1931 to 1934) till his death. In 1935 he was elected leader of the Federal Labour party in succession to Scullin. On 3 Oct. 1941 Fadden's administration, after being in office for only a month, fell on a vote of censure on the budget and C. was summoned by the governor-general to form a gov. When Japan opened hostilities in 1941 C. confronted the gravest crisis in Australian hist. and turned to the U.S.A. for aid, writing in the *Melbourne Herald* that Australia looked to them 'free from any pangs as to traditional links or kinship with the United Kingdom.' In Feb. 1942 his

Cabinet ordered for the defence of Australia the complete mobilisation of all the human and material resources of the country and, with Brit. consent, secured the repatriation of the Australian Imperial Force, entrusting the supreme direction of the war in the Australian zone to the Amer. general MacArthur. C. himself assumed the title of defence minister. In Nov. 1942 he obtained the backing of his own party in negotiating for the service of the A.I.F. and the militia as a homogeneous army in the SW. Pacific area. In Aug. 1943, after the Jap. threat to Australia had passed, he secured at the election a two-house victory for Labour with a working majority. In March 1944 he visited London to attend



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JOHN CURTIN

the prime ministers' conference and won a reputation there as a commanding and whole-hearted leader of the Australian people. He differed, though, from Mr Mackenzie King in regard to his own suggestions for improved machinery of consultation within the empire. His health, however, began to deteriorate at the end of 1944 and he *d.* in July of the following year. C. had a simple strength and directness of character and utterance which helped him, as neither mere brilliance nor astuteness could have helped him, to fill the position of national leader demanded by the exigencies of a desperate crisis in Australian hist. Hist. may justly hold of him that in her most fateful emergency he served his country with an entire fidelity and an ability which were no small factors in her

victory and in winning recognition of Australia in the war councils of the Allies in Washington and London. See A. Chester, *John Curtin*, 1943.

Curtis, George Ticknor (1812-94), Amer. lawyer and historian, b. Watertown, Massachusetts; graduated at Harvard in 1832; admitted to the Bar, 1836; practised in Worcester, Boston, New York, and Washington, appearing before the U.S. supreme court in the Dred Scott case. He wrote a *Life of Daniel Webster*, 1870, and other political biographies.

Curtis, George William (1824-92), Amer. man of letters, b. Providence, Rhode Is. He began life as a clerk in New York, and after having spent over a year with the Brook Farm community (q.v.), 1842, he travelled on the Continent and in Egypt and Syria. On his return to America in 1850 he pub. his travels, and soon acquired a reputation. He was appointed editor of *Putnam's Monthly* in 1852. In 1857 he became editor of *Harper's Weekly*, and contributed serially to many magazines. C. was well known as a lecturer and public speaker, and was a keen member of the anti-slavery movement. His chief pub. are *Nile Notes of a Howadji*, 1851; *Lotus Eating*, 1852; *Potiphar Papers*, 1853; *True and I*, 1856; *Eulogy on Wendell Phillips*, 1884; and *Party and Patronage*, 1890. His letters to Dwight were pub. in 1898, and his *Orations and Addresses* in 1893-4. See life by E. Cary, 1894.

Curtis, Sir Roger (1746-1816), admiral, b. Downton, Wilts. He entered the navy in 1762, and as a lieutenant was sent out to Newfoundland in 1771. He later served in the flagship under Lord Howe, and in 1780 commanded the *Brilliant* at the siege of Gibraltar. He took part, under Howe, in the action of the 'glorious 1st of June', 1794, was sent home with the dispatches, and in July was raised to the rank of rear-admiral, and was created a baronet. In 1798 he joined Lord St Vincent at Cadiz, and in the following year became commander-in-chief at the Cape of Good Hope. He was made admiral in 1804, commander-in-chief at Portsmouth in 1809, and G.C.B. in 1815.

Curtius (Quintus Curtius Rufus), Rom. historian who probably lived towards the end of the first century AD. He wrote a hist. of Alexander the Great in ten books, of which the first two and portions of others are lost. This work, though long a standard schoolbook, is of no great historical value. See the ed. by P. Dansté, 1897. There is an Eng. trans. by P. Pratt, 1821.

Curtius, Ernst (1814-96), Ger. archaeologist, b. Lübeck. He became prof. of archaeology and philology at Göttingen (1856-63), and of anc. hist. at Berlin, 1868. C. superintended the Ger. excavations at Olympia. His writings include *Peloponnesos*, 1851-2, *Griechische Geschichte*, 1857-61; and *Altische Studien*, 1863-4.

Curtius, Georg (1820-85), Ger. philologist, prof. in the univs. of Prague (1849-1854), Kiel (1854-62), and Leipzig (1862-1885). His chief pub. are *De nominum graecorum*, 1842; *Die Sprachvergleichung*,

1845; *Griechische Schulgrammatik*, 1852; 50 years later, 1902, appeared the 23rd ed.; *Gründzüge der griechischen Etymologie*, 1858-62; *Zur Chronologie der indogermanischen Sprachforschung*, 1867; and *Das Verbum der griechischen Sprache*, 1873-6.

Curtius, Manlius, hero of a Rom. legend invented to explain the existence of a pond (*lacus Curtius*) in the Forum. It was said that in 362 BC a large chasm appeared in the Forum, which the sooth-sayers announced, could only be filled by throwing into it 'Rome's greatest treasure.' Thereupon C. proclaimed that there was no greater treasure than a good citizen; mounted his horse fully armed; and rode into the abyss, which immediately closed over him.

Curule Chair (Lat. *sella curulis*), used by the higher magistrates and later by the emperors in anc. Rome. It was made like a folding stool with curved legs and no back, and was inlaid with ivory or precious metals. The name 'curule' is derived from *curvus* (a chariot), which leads to the supposition that the C.C. was originally set up in the magistrate's chariot.

Curvature, Circle of, see RADIUS OF CURVATURE.

Curvature of the Spine, see SPINE.

Curve. A C. can be described as a line which is continuously changing its direction. A plane C. may be regarded from two points of view: (a) as the locus of all the points which satisfy a given condition, the simplest example of which is the circle (q.v.); (b) as the locus of a point moving subject to given conditions, the best known example of which is the C. described by a projectile in the absence of atmospheric resistance. This is the parabola (q.v.). Under (a) are included a large number of C.s, such as the cycloid, which is the path described by a point on the circumference of a circle rolling on a fixed right line; the ellipse, the lemniscate, the tractrix, and many others (q.v.). Under (b) are included conic sections (see GEOMETRY, *Higher Pure G.*), which are described by the planets around the sun under the condition that the force of attraction varies directly as the product of the masses of the sun and planet and inversely as the square of their distances apart (see GRAVITATION). Another example is the brachystochrone, which is the curve of quickest descent under the action of gravity from one given point to another given point (see VARIATION, CALCULUS OF).

Another type of C. is derived from a given C. and is called the *evolute* of the original C. If the centres of the circles of curvature (q.v.) be taken for the original C., we get a new C. called the *evolute* of the original one. The original C., considered with respect to its evolute, is called an *involute*. See also CATENARY; SINE, CURVE OF.

Curved Space, a term used in expositions of the theory of relativity (q.v.). It is essentially metaphorical; the 'space' referred to is a four-dimensional continuum, and the 'curvature' is a certain

function of the four co-ordinates which happens in a very special case to reduce to the curvature of a normal three-dimensional surface.

Curwen, John (1816-80), musical educationist, *b.* Heckmondwike, Yorkshire. He developed and improved the 'tonic sol-fa' system, invented by Sarah Glover. He founded the Tonic Sol-fa College at Plaistow in Essex (1875), and started a publishing house in London, which brought out his *Tonic Sol-fa Reporter*.

Curzola, *see* KORČULA.

Curzon, George Nathaniel (first Marquess Curzon of Kedleston) (1859-1925), statesman, the eldest son of the fourth Baron Scarsdale, *b.* Kedleston, Derbyshire, and educ. at Eton and Balliol College, Oxford. In 1885 he became private secretary to the marquess of Salisbury. He entered Parliament as Conservative member for Southport the following year, and retained his seat till 1898. He was under-secretary of state for India (1891-1892); and, on the return of Salisbury to office in 1895, he became under-secretary for foreign affairs, which appointment he held till 1898. In that year he went out to India, viceroy and governor-general, as first Baron C. of Kedleston in the peerage of Ireland. C. worked with untiring energy for the interests of India; and, though his tenure of office was completed in Aug. 1903, it was extended in order that he might carry out his schemes for reform. His autocratic disposition was frequently the subject of criticism. In 1905 Kitchener, commander-in-chief of the forces, objected to the dual control, civil and military, in the Indian Army, and, though his view was opposed by C., the gov. at home supported Kitchener. This led to C.'s resignation. On his return to England he became a prominent member of the Opposition under the leadership of Balfour and afterwards of Bonar Law. He was elected chancellor of Oxford Univ. in 1907, and lord rector of Glasgow in 1908. In the latter year he was elected to the House of Lords as an Irish representative peer. He supported the policy of Lord Lansdowne in allowing the Parliament Bill to pass in 1911. In that year he was made Earl C. of Kedleston, Viscount Scarsdale, and Baron Ravensdale. He thus became a peer of the United Kingdom. In May 1915 he became lord privy seal in Asquith's reconstructed ministry, a member of the war committee and president of the air board. In Dec. 1916, on the formation of the Lloyd George Gov., he became lord president of the council, leader of the House of Lords, and member of the War Cabinet. In Oct. 1919 he succeeded Balfour as foreign secretary; and he remained so under Bonar Law and Baldwin. In 1922-3 he was at Lausanne to negotiate peace with Turkey. On Bonar Law's retirement in 1923 C. had hoped to succeed him as premier; but the office went to Baldwin. C. never really recovered from the personal disappointment of this. He retired at the beginning of 1924, having earned the reputation of being a great viceroy, a great foreign secretary, and one

of the finest orators of his times. In 1921 he had been created marquess. His pubs. include: *Russia in Central Asia*, 1889; *Problems of the Far East*, 1894; *Modern Parliamentary Eloquence*, 1913; *Subjects of the Day*, 1915. *See* Lord Ronaldshay (Marquess of Zetland), *The Life of Lord Curzon*, 1927-8; and H. Nicolson, *Curzon, The Last Phase*, 1934.

Curzon Line, proposed E. frontier of Poland recognised by the Allies in Dec. 1919 on suggestions by Lord Curzon (q.v.), but not adopted as a boundary between Poland and Russia in consequence of the former's victory over the latter in 1920. The line ran N. from the old frontier of Russia and Austria-Hungary to Brest-Litovsk, then by the course of the R. Bug to Namirov, Jalkova, and Grodno. The line became a virtual reality as Poland's E. frontier in 1945, having been accepted as a basis for the future demarcation (with some minor modifications in Poland's favour) at the Teheran Conference in 1943 by Russia, Great Britain, and U.S.A. *See also* POLAND, HISTORY.

Cusa, Nikolaus of, or *Nikolaus Cusanus* (1401-64), proper name of Chryppf, a Ger. cardinal and philosopher; *b.* Cues (or Cues) on the R. Moselle, in the diocese of Treves, of humble origin. He was educated at the univ. of Padua, became archdeacon of Liège, and sat in the council of Basel (1431-49). For the council he wrote *De Concordantia Catholica*, opposing the papal claims; but in 1440 he changed his views, entered the papal service, and was made a cardinal in 1448. Two years later he was appointed bishop of Brixen in the Tyrol and papal legate for Germany. C. broke away from the prevailing scholasticism and indulged in mystical speculations which have been described as pantheistic--unjustly, however, for while asserting that the Spirit of God breathed over the world, he adds that the Divine Being never became part of the world. He was also a mathematician and believed in the revolution of the earth round the sun. In 1436 he suggested the reform of the Julian calendar. *See* F. A. Scharpf, *Der Cardinal und Bischof Nikolaus von Cusa*, 1871; Schang, *Cardinal Nikolaus von Cusa als Mathematiker*, 1872; J. Lanz, *Die Doctrina Ignorantia des Nikolaus von Cues*, 1923; and G. Kallen, *Nikolaus von Cues als politischer Erzieher*, 1941.

Cuscuta, *Phalaris*, genus of marsupials. There are five species, all of which are about the size of a cat, and these inhabit Australia and the E. Indies. They have a prehensile tail, an opposable big toe, and in habit they are arboreal. *P. maculatus* is known as the spotted C. or tiger cat; *P. ursinus* and *P. celebensis* are natives of the Celebes.

Cush (Heb. *Kūsh*), according to the genealogy in Gen. x the eldest son of Ham, and the eponymous ancestor of the Cushites or Ethiopians.

Cushat, *see* WOOD-PIGEON.

Cushing, Caleb (1800-79), Amer. politician, *b.* Salisbury, Massachusetts, and educated at Harvard. He was called to the Bar in 1822 and practised at Newburyport. He contributed legal articles to the

North American Review, and in 1825 was elected to the state legislature, and in the following year to the state senate. He was elected to Congress in 1835, and under the presidency of Tyler became the first Amer. minister plenipotentiary to China. In this capacity he made a treaty between his own country and China in 1844, which opened up China to Amer. missionaries and Amer. trade. From 1874 to 1877 he acted as the United States ambas. in Spain. Author of *The Practical Principles of Political Economy*, 1826; *Review Historical and Political of the Late Revolution in France*, 1833; *Reminiscences of Spain*, 1833; *The Growth and Territorial Progress of the United States*, 1839. See Livingston, *Portraits of Eminent Americans*, 1851, and biography by Claude M. Fues, 1923.

Cushing, Harvey Williams (1869-1939), Amer. neurological surgeon, b. Cleveland, Ohio, son of Henry Kirke C., a physician and son and grandson of physicians. Educated at Yale (graduated 1891) and Harvard (A.M. and M.D. 1895). Began practice in 1895. Associate prof. of surgery at Johns Hopkins Univ., 1902-11; also pursued study abroad, at Berne and Liverpool. From 1911 prof. of surgery at Harvard. He was responsible for some outstanding advances in the field of nerve and brain surgery. He bequeathed his great collection of old medical works to Yale Univ. Author of sev. medical works and *The Life of Sir William Osler*, 1925. Biography by J. F. Fulton, 1946; bibliography of his writings, 1939.

Cushion Capital, in Romanesque architecture, a cubical capital with its lower part and corners truncated or scalloped out, producing some resemblance to a cushion.

Cushman, Charlotte Saunders (1816-76), celebrated Amer. actress, b. Boston, of Puritan descent. She made her debut as an opera singer in 1834 in *The Marriage of Figaro*, but her voice suddenly failed, and in the following year she appeared as Lady Macbeth, to the end of her life her greatest role. She played in comedy parts, but excelled mainly in tragedy. Her chief parts, besides Lady Macbeth, were Romeo, Rosalind, Meg Merrilees, and Ophelia. See E. Stebbins, *Charlotte Cushman: Her Letters and Memories of Her Life*, 1878; and C. E. Clement, *Charlotte Cushman*, 1882.

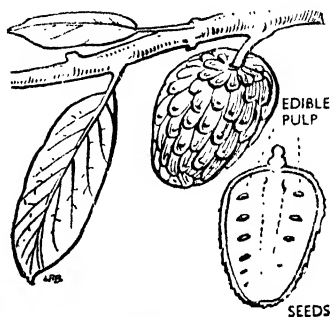
Cusp, in Gothic architecture, one of the foliated points which terminate the internal curves of the trefoiled, cinquefoiled, etc. heads of pointed windows.

Cusset, Fr. tn in the dept of Allier, near Vichy. It is a spa, and manufs. linen and paper. Pop. 9700.

Custard-apple, or **Bullock's Heart**, popular name of the species *Annona reticulata*, a deciduous tree, native to tropical America and allied to the Cherimoyer (q.v.). See ANNONACEAE.

Custer, George Armstrong (1839-76), Amer. soldier, b. New Rumley, Ohio, U.S.A. He fought with distinction through the Civil war, serving successively under Kearny and McClellan. As major-

general of the volunteers he defeated Gen. Early at Waynesboro in 1864. In 1867-8 he took part in Hancock's expedition against the Cheyennes. He sev. times defeated other hostile Indians in the W., and was finally killed with his men by a body of Sioux near the Little Horn in Montana. He wrote *My Life on the Plains*, 1874. See F. W. Whittaker, *Life of General George A. Custer*, 1876; Mrs Custer, *Boots and Saddles, or Life with General Custer in Dakota*, 1885; M. Merington, *The Custer Story*, 1950; F. Hunt, *I Fought with Custer, the story of Sgt Windolph*, 1953; E. I. Stewart, *Custer's Luck*, 1955; W. A. Graham, *The Custer Myth*, 1955.



CUSTARD-APPLE

Customs Duties consist for the most part of taxes levied upon goods and produce brought for consumption from foreign countries, but may include taxes on certain exports. The term also embraces taxes on goods and produce passing from one port to another of the same country, like the Fr. *octroi* system. At the present time there is no duty on goods exported from the U.K., that on coal, which was the last maintained, having been abolished in 1845, though for a short period, 1902-6, there was a small impost of 1s. a ton on coal to help meet the cost of the Boer war.

Historically C. D. sprang from the royal prerogative of regulating all commercial matters, and the liability of imports to a charge levied by the king is of very remote date. According to Sir Win Anson, customs originated in a charge intended by way of repayment to the king for the cost incurred in maintaining the ports and keeping the sea clear from pirates. Later the charges were increased and embraced prisage, i.e. the royal right to 1 cask of wine out of every 10 in the ship's cargo, at 20s. a cask; customs on general merchandise; and on wool, fish, salt, and leather. Then merchants began to complain of the levy of 'evil tolls,' with the result that by Magna Carta they were being allowed to trade without being subject to any but 'ancient and statute customs.' In 1275 Edward I, in a statute

which was probably the earliest passed in the U.K. whereby the Crown was authorised to levy C. D., was granted in exchange for the 'ancient and lawful customs' (*antiqua custuma*) of the charter an export duty of half a mark on every sack of wool, and 1 mark on the last of leather. In 1303, by the *Carta Mercatoria*, foreign merchants were charged 40 pence on every sack of wool and half a mark on the last of leather in consideration of certain privileges. This charge was known as the *nova custuma*, and was refused by the representatives of the burgesses (q.v.). The *antiqua* and *nova custuma* remained, however, together with prisage and butlerage upon imported wines, a part of the hereditary revenues of the Crown until their absorption in the subsidies of tonnage and poundage made to the Crown at the beginning of each reign or Parliament. The word *tonnage* in the early statutes was applied to a specific duty charged on the importation of each ton or tun of wine and the exportation of each tun of beer; the word *poundage* was applied to other articles.

James I made unconstitutional and illegal impositions, and in 1608 issued a Book of Rates imposing a number of new and heavy duties. Years of bitter controversy followed. The resistance of the merchant Rate to the imposition of the added duty on currants, and the judgment by servile judges of the Court of Exchequer in favour of the Crown, form an epoch in the constitutional hist. of the U.K., and confirm the celebrated aphorism of Hallam that our liberties were purchased by the money of our forefathers. The Petition of Right, 1628, declared these impositions illegal. The first Book of Rates agreed upon by the House of Commons is generally believed to be that compiled in 1642 by a committee of the House. In 1660, at the restoration of Charles II, the C. D. were consolidated and the principle of poundage was altered in regard to certain articles, upon which specific duties were imposed instead; but the old system of affixing a value on each article was adhered to in regard to the bulk of the articles, the time-honoured distinctions between *antiqua* and *nova custuma* were abolished, and rates were classified under 3 heads, viz. tonnage on wine, poundage on imported and exported goods, and a duty on woollen cloth, which last duty was repealed in 1700.

In the reigns of William III and Anne many additional specific rates were imposed in place of the valuation for the subsidy. This course of substitution was pursued from time to time, until in 1747 there were as many as 39 prin. branches of C. D. with subdivisions applying to different kinds of goods, the whole constituting an endless embarrassment to traders. In 1787 Pitt effected a new consolidation of C. D., and the entire revenue derived therefrom was to be paid into a single fund, called the Consolidated Fund, thus doing away with the old practice of allocating each duty to a specific purpose. Sev. Consolidation Acts

have been passed since that time, and new imposts created.

In 1853 the solicitor for the customs was employed on a work of complete consolidation. The result of his labours was a condensation of the various Acts into a clear methodical arrangement which formed the basis of the Customs Consolidation Act of 1853. Under that Act provision was made for the first time for the acceptance of general or covering bonds in lieu of the immense number of separate or special bonds, which previously involved many thousand attendances per annum of merchants and their sureties. Between 1842 and 1853, however, a salutary change had come over the financial policy of the U.K. With the advent of Peel came the initiation of the policy that was carried on by Gladstone and other statesmen after him, and which was in substance the fiscal policy of the country up to the year 1932, when a protective tariff was re-introduced. That policy, which was twofold, was directed to the simplification and cheapening of the collection of revenue by means of a reduction of the number of articles or commodities on which duty was leviable; and to the strengthening of home industries by the abandonment of all taxes on raw material imported into the country.

By about 1872 all foreign products were free from duty on importation, with the exception of 10 leading articles, cocoa, coffee, currants, figs, raisins, spirits, sugar, tea, tobacco, and wine—and even these were allowed very considerable reductions. Until 1869 corn and flour contributed to the revenue at nominal rates, corn at 3s. and flour at 4d. per cwt. After 1869 both were admitted free, and it is hardly an exaggeration to say that the decision of the electorate in favour of the maintenance of a free trade policy was a decision due as much to fear that some corn duty might be imposed as to the fear that food prices would rise as an indirect result of tariffs proposed on imported manufs.

In 1915 McKenna imposed a duty equal to 33½ per cent *ad valorem* on motor cars, motor bicycles, motor tricycles, with their component parts other than tyres; musical instruments, including gramophones, pianolas, and similar instruments; and clocks and watches, with components, imported into Great Britain or N. Ireland. The 1925 Finance Act was noteworthy for introducing empire preference in respect of sugar, molasses, glucose, and saccharin produced within the empire. Preferential rates of duty were fixed at three-quarters of the full rate on tobacco, at five-sixths of the full rate on silk and artificial silk, and so on.

A fundamental change was introduced by the National Gov. of 1931, which, soon after coming into office, passed emergency legislation to check dumping in anticipation of its projected reversion to protection. Under the Abnormal Importations (Customs Duties) Act, 1931, the Board of Trade was empowered to levy C. D. up to 100 per cent *ad valorem* on foreign manufs. imported into the U.K. in abnormal

quantities. The Act was to continue in force for only 6 months, but that interval was sufficient to allow the passing of the Import Duties Act, 1932, which provided for the imposition of a general *ad valorem* duty of 10 per cent on all imports (except those already dutiable) subject to a free list, comprising chiefly foodstuffs and raw materials. This free list is, however, subject to amendment by Order in Council. The Act also provided for the imposition of 'additional duties' (i.e. over and above the general *ad valorem* duty) on articles of luxury. The principle of empire preference was followed by exempting dominion goods and the goods of the colonial empire absolutely.

The Customs Consolidation Act, 1876, which, with the various amending Acts passed since that time, may be regarded as the prin. statute relating to C. D., contains a great number of provisions dealing in detail with the collection and management of duties; disputes and inquiries respecting C. D.; drawbacks; bonds and securities entered into by persons for the due performance of any condition relative to the customs; penalties for signing false declarations relating to the customs; prevention of smuggling; and legal proceedings, civil or criminal, under the various Customs Acts. A drawback is an allowance made by the commissioners to merchants on the re-exportation of imported goods liable to duties. In some cases it consists of the whole, in others of a part, of the C. D. paid. The effect is that goods can then be sold in a foreign mkt at their normal cost in the home mkt. See also EXCISE DUTIES.

Customs or Usages. In a general sense, C. or U. may be said to be the source or basis of all principles of law. In England C. or U. are said to be either general or local; the former have prevailed from time immemorial, and form the foundations of the common law, while the latter are peculiar to certain dists. only, and in their nature form exceptions to common law principles. The 'Law Merchant,' or C. of merchants, furnished an instance of local or particular C., but by reason of the subsequent universality of their application gradually became engrafted into the common laws. To be valid C. or U. must have existed from time immemorial (the time of legal memory is fixed as not going beyond 1189). In addition, they must be shown to have been continuous; universally acquiesced in; reasonable, i.e. not contrary to any known principle of law or public morality; definite; and, in the opinion of those among whom the custom is alleged to exist, binding. See also COMMON LAW.

Customs Union, a federation of independent states or nations with the object of assimilating their arrangements for the collection of duties on imports. The term was of especial significance in relation to Germany, for the consciousness of a national unity among the Ger. peoples was ultimately traceable to the estab. of the Zollverein (Zoll, toll, verein, union)

between Prussia and some of the smaller states shortly after the Napoleonic wars. The political condition of the numerous sovereign states was one of confusion. The Zollverein was organised as the outcome of a general reform of the existing tariff conditions, which imposed tariffs on 2800 classes of goods in various parts of Prussia, while in others there prevailed free importation. From the time Hesse joined the union in 1828 the hist. of the Zollverein to 1871 was one continuous process of the absorption of one state after another until, in that year, the Ger. Empire itself was founded, and the Prussian Zollverein was finally transformed into the Ger. Zollverein. Hamburg and Bremen were included in 1888; before then Germany's economic policy had been one of free trade, but in that year a hard and fast protective system was introduced which, with subsequent modifications in the shape of commercial treaties (q.v.) with some of the neighbouring nations and most-favoured-nation treatment for Great Britain, continued until recent years. A somewhat parallel case is the development of the C. U. formed between Cape Colony, the Orange Free State, and Brit. Bechuanaland towards the end of last cent., and joined shortly afterwards by Basutoland. The question of the adoption of some kind of C. U. or Zollverein for the different members of the Brit. Empire was before the Brit. public in a more or less urgent form from the time of the tariff reform campaign of Joseph Chamberlain in 1903. But the proposals put forward by the dominion premiers at the Imperial Conference, 1930, for a tariff on foreign foodstuffs were rejected by the Labour Gov. in London. An approach to a C. U. of the Brit. Commonwealth of Nations was implied in the combined operation of the Import Duties Act, 1932, and the Ottawa Trade Agreements concluded in Aug. 1932 between the U.K. and the dominion govts. and between the dominion govts. *inter se*. A C. U. has existed between Belgium and Luxembourg since 1922, with the exception of 5 years during the Second World War. The Netherlands on the one hand, and Belgium and Luxembourg on the other, agreed on a C. U. in 1944, and this was brought into force, with certain reservations, in 1948 (see BENELUX).

A C. U. is distinguished from a free-trade area. The common mkt projected in 1956 by the 6 Messina Powers (France, Italy, Germany, Belgium, Netherlands, Luxembourg) postulated: (1) complete free trade between its members, i.e. abolition of all tariffs, quotas, and other trade restrictions; (2) common tariffs and other terms for goods imported from non-member states. The free trade zone, which the U.K. indicated it was ready to consider joining, postulated: (1) free trade within the zone; (2) freedom for individual member-countries to determine their own tariff policies towards non-members. The double goal was to be achieved in a series of stages lasting 12-15 years. The U.K. belief was that the zone

as a bargaining unit would probably secure better trading terms from the common mkt countries than if each member were left to make arrangements with the common mkt bilaterally. The total pop. of the 6 common mkt countries was 161 million. With the U.K. and the Scandinavian states the total free trade area would have numbered 240 million; with the Scandinavian states, but without the U.K., 190 million. The 2 latter figures exceed the U.S.A. or the U.S.S.R. pop.

Another project—the European Commodities Plan—was submitted by Switzerland and the Benelux and Scandinavian states (the 'low tariff club'). Under it each member would list the goods which it imported overwhelmingly from within the O.E.E.C. (q.v.) group. Tariffs on these goods would be cut or repealed, and in this context the most-favoured-nation clause would be retained. See FREE TRADE; IMPERIAL PREFERENCE.

Custos Brevium, the title until 1831 of officers responsible for the custody of all writs returnable in the courts of king's bench and common pleas.

Custos Rotulorum, see KEEPER OF THE ROLLS.

Custoza, or **Custoza**, It. vil., in Veneto (q.v.), 10 m. SW. of Verona (q.v.). In 1848 Radetzky (q.v.) defeated the Piedmontese here, and again in 1866 the Austrians here defeated an It. army (see LA MARMORA). Pop. 700.

Cutch, formerly the largest of the Western India states, now a Chief Commissioner's prov. administered direct by the gov. of India. C. lies to the N. of Kathiavar, now Saurashtra, and is itself bounded on the N. by Pakistan. In between C. and Pakistan lies the Rann of C., a large morass which in dry weather becomes two salt lakes 7000 sq. m. and 2000 sq. m. in extent. A new port, Kandla, is being developed.

Cuthbert, Saint (c. 635-87), monk and bishop, was b. probably in Northumbria, of Lowland Scottish parentage, and was originally a shepherd. In 651 he had a vision of a choir of angels bearing the soul of St Aidan to heaven, and in the same year joined the monastery of Old Melrose. On the death of St Boisil, in 661, he was chosen prior, with St Eata as his abbot, whom he later accompanied to the monastery of Lindisfarne. In 676 he felt that he was called to a sterner and simpler life, and became a hermit on House Is., off Farne Is., where he built his hut with his own hands. Egfrid, king of Northumbria, and Trumwin, bishop of the Picts, persuaded him, in 684, to accept the bishopric of Hexham, which he subsequently exchanged for that of Lindisfarne. Two years later he resigned his bishopric, and once again withdrew to his cell, where he d. within a year. His body was removed from Lindisfarne in 875 for fear of its being desecrated by the Danes, and for a time remained first at Chester-le-Street and then at Ripon, ultimately finding its resting-place in Durham Cathedral. His feast is on 20 March. See Bède, *Historia Ecclesiastica Gentis Anglorum*, and lives by T. Raine, 1828, and C. Eyre, 1849.

Cuticle, see SKIN.

Cutler, Manasseh (1742-1823), Amer. clergyman, scientist, physician, and coloniser. He took a leading part in drafting the ordinance of 1787 for the gov. of the NW. Ter.

Cutlery (O.F. *cotellier*, Lat. *cultellus*, a little knife), term applied originally to cutting instruments of many kinds. The word is often extended to include all types of table implements, so that forks, etc. may be added. Knives were not placed on the table till the early 16th cent., diners being expected to carry on their persons such pocket-knives as they might require. Forks were introduced from Italy in the reign of James I. Sheffield was famous for its C. as early as the 14th cent., but lost some of its pre-eminence by the 17th cent., when Birmingham was regarded as the centre of the trade. But since 1800 Sheffield has increased in industrial prosperity, and its C. wares have now a world-wide fame. The term C. also applies to penknives, razors, and scissors.

Cuttaek, tn and temporary cap. of Orissa state, India. C. is situated at the head of the Mahanadi Delta, and is also the centre of a network of canals. It was founded 1000 years ago and is known for filigree work in gold and silver. A decision has been taken to move the state cap. to Bhubaneswar (q.v.).

Cutter, Charles Ammi, see CATALOGUES AND CLASSIFICATION.

Cutter, name given to a boat, part of the equipment of a warship. Cs are used for sailing or rowing, and are carried amidships or at the davits. The name is also given to a vessel with a single mast, a mainsail, a fore-staysail, and a jib at the bowsprit end.

Cuttle-fish, sometimes regarded as the name of any mollusc of the class Cephalopoda (q.v.), but more usually applied to the species of the genus *Sepia*. The species, of which *S. officinalis*, the common C. of Britain, is an example, has two gills, eight arms, and two long tentacles, a broad, flattened body, an ink-bag, and narrow and elongated fins; and the calcareous shell, called the cuttlebone, is internal. In length a C. may be from 6 to 10 in., and its colour varies from grey to brown. The genus is widely distributed and is notable as producing the pigment known as sepia.

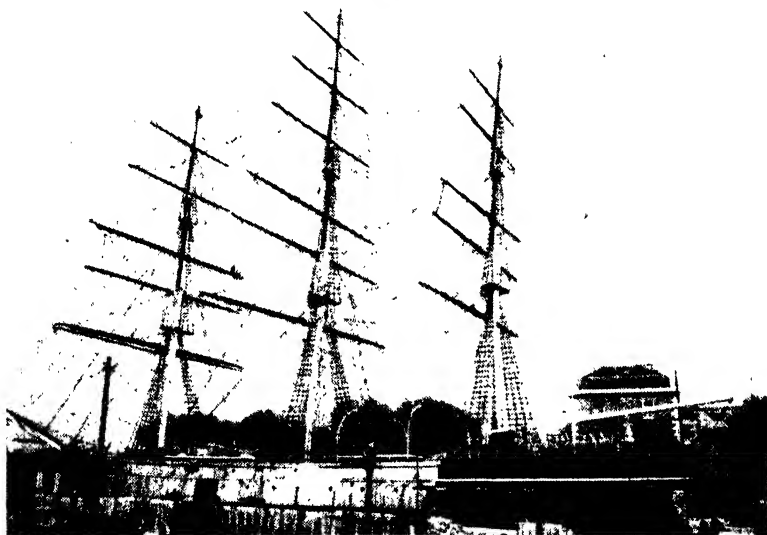
Cutts, John, Baron Cutts of Gowran, Ireland (1661-1707), soldier, probably b. Arkesden, Essex. He was educ. at Catherine Hall, Cambridge, and joined the suite of the duke of Monmouth. He later served under Charles, duke of Lorraine, against the Turks, in Hungary, and in 1686 played a prominent part in the capture of Buda. He then served in Holland under William of Orange, whom he accompanied to England and with whom he fought in Ireland at the battle of the Boyne and the siege of Limerick (1690). For his services he was created Baron C. of Gowran. During the following twelve years he did brilliant service, being present

at the battles of Steenkerque (1692), Brest (1694), Namur (1695), at the capture of Fort St Michael (1702), and was third in command at Blenheim (1704). C. sat in Parliament for sev. years, from 1689 to 1691, and again from 1702 to 1707. Besides being a soldier, he was a scholar and versifier. He was a friend of Steele, who addressed to him his *Christian Hero*, but was made ruthless fun of by Swift, particularly in his somewhat scurrilous lampoon, *Ode to a Salamander*, 1703. See S. S. Swartley, *The Life and Poetry of John Cutts*, 1917.

'Cutty Sark,' one of the most famous tea-clippers, engaged, with the *Thermopylae*, *Flying Cloud*, *Arcturion*, and others, in

Preservation Society, with the Duke of Edinburgh as active patron, was formed to acquire the vessel with a view to permanent preservation. This object was fulfilled in June 1957, when the *Cutty Sark*, fully restored in a concrete dry berth at Greenwich, was opened to the public by the Queen. The 'Cutty Sark' ('short shirt') is worn by Nannie, a character in Burns' *Tam o' Shanter*. See also CLIPPER. See Alan Villiers, *The 'Cutty Sark'*, 1953.

Cutworm, name given to the larvae of many species of Noctuidae, or owl-moths, from their displeasing habit of cutting off the young shoots of plants cultivated by agriculturists. They belong



National Maritime Museum, Greenwich

THE 'CUTTY SARK'

the China tea trade during the last century. She was built at Dumbarton in 1869 for Capt. John Willis. With the opening of the Suez Canal in the same year, the tea trade was rapidly lost to the steamers, and in 1879 the *Cutty Sark* was transferred to the Australian wool trade. With Capt. R. Woodget as master (1885-95) she regularly made fast passages, averaging 80½ days outward and 82½ days homeward. In 1895 Capt. Willis sold his ship to the Portuguese, and she remained under the Portuguese flag until 1922, when she was purchased by Capt. W. H. Downman (for £6000) and restored. She was then largely used as a training ship at Falmouth. On the death of Capt. Downman his widow presented the ship to the Thames Nautical Training College (H.M.S. *Worcester*). In 1952 the *Cutty Sark*

to the genus *Agrolis*, and are allied to the army-worm and cotton-worm. *A. mesoria* is a common species in America.

Cuvier, Georges Léopold Chrétien Frédéric Dagobert, Baron (1769-1832), anatomist and naturalist, writer, and educational reformer, b. Montbéliard, Doubs, France, then under the rule of the king of Württemberg. He studied at the Carolinian Academy at Stuttgart, where he distinguished himself in every branch of study. At the age of nineteen he became tutor to the only son of Count d'Héricy near Caen, where he was enabled to study the animals and fossils of the shore and rocks. It was here that he pursued the researches which enabled him to reorganise the classification of invertebrate animals. In 1795 he went to Paris, and by the exertions of his friends,

Tessier and Geoffroy St-Hilaire, became prof. at the Jardin des Plantes. In 1798 he began to publish his papers on the fossil bones of Montmartre, which led later to his great work, *Recherches sur les ossements fossiles des quadrupèdes*, 1812. In 1800 he was appointed prof. of natural hist. in the Collège de France. Here he came under the notice of Napoleon, who, struck by his administrative ability, appointed him one of the inspectors of the lycées in the prin. tns of France, and later employed him in reorganising the educational institutions all over Europe, in N. Italy, Holland, and finally in Rome. In 1814 the emperor appointed him a councillor of state, which appointment was confirmed by Louis XVIII. In 1822 his services to the Protestant faith were acknowledged by his appointment as grand master of the faculties of Protestant



BARON CUVIER

theology in the Univ. of Paris. In 1832 Louis Philippe made him a peer, but he d. of paralysis the same year in Paris. In spite of the valuable results of his researches, C.'s mind was essentially cast in the mould of an older school. His method was to construct from facts or materials which he could himself observe; he had no patience with the speculative theories of his contemporaries, and was bitterly opposed to the dawning theory of evolution. In addition to the work already mentioned he wrote *Le Règne animal*, 1816, a book which summarised his observations on the structure and habits of the animal kingdom, and was long the standard work on zoology; *Mémoire pour servir à l'histoire et à l'anatomie des mollusques*, 1816, in which he followed out a classification of the Mollusca, indicated by Adamson, founded upon the structure of the animal rather than the shell; *Rapport historique sur les sciences naturelles*, 1789-1808; *Histoire*

naturelle des animaux, 1798; and many others. See H. D. de Blainville, *Cuvier et Geoffroy Saint-Hilaire*, 1890; and H. Dandín, *Cuvier et Lamarck*, 1926.

Cuxhaven, Ger. seaport in the Land of Lower Saxony (q.v.), at the SW. end of the Elbe (q.v.) estuary, 108 m. NNW. of Hanover. Until 1935 it was the forward port of Hamburg (q.v.). As well as being a port for ocean-going ships it is an important fishing tn and has a tourist industry. Pop. 50,000.

Cuyabá, see CUIABÁ.

Cuyahoga Falls, city of Ohio, U.S.A., near Akron, with manufs. of machinery and rubber goods. Pop. 29,200.

Cuyapo, municipality of Nueva Ecija prov., Luzon, Philippine Is., growing corn, rice, and tobacco. Pop. 28,923.

Cuyo Islands, volcanic archipelago in Palawan prov., Philippines. The chief is. is Cuyo. Coconuts and rice are grown. Pop. 22,445.

Cuyp, Aalbert, or Aelbert (1620-91), Dutch painter, b. Dordrecht. He was the son of Jakob Gerritsz C., a portrait painter, with whom he began his study of painting. C.'s sunset pictures have been compared favourably with those of Claude. He painted, almost entirely, scenes of outdoor life—fields, camps, markets, and the like. His reputation has increased greatly since his death, England being among the first to recognise his genius. There are 8 of his works in the National Gallery, London, and he is also represented in the Wallace collection and in Dublin and Dulwich. Among his best pictures are 'The Meuse near Dort' and 'Banks of a Lake.' See T. Cole, *Old Dutch and Flemish Masters*, 1902.

Cuyp, Benjamin (1612-52), Dutch painter, a cousin of Aalbert C. (q.v.). His landscape and biblical pictures show the influence of Rembrandt, and his familiar scenes that of Teniers. 'Joseph in Prison' and 'The Visit of the Magi' are among his best known works.

Cuyuni, or Cuyuwini, riv. of Brit. Guiana, rising in Venezuela; a trib. of the Essequibo which it joins near Bartica. It is navigable for most of its 350 m. and has gold- and diamond-bearing tribs.

Cuzco: 1. Dept. 2nd largest in Peru, mountainous and forested. Grain is grown in the upper valleys; sugar, cotton, coffee, chinchona, etc. on the lower slopes. Cattle are grazed and sheep, alpacas, vicuñas, and llamas are reared for wool. Area 55,731 sq. m.; pop. about 540,450 (plus some 25,000 tribal Indians). See Sir C. Markham, *The Incas of Peru*, 1910; Ena Dargan, *The Road to Cuzco*, 1948; and C. Sendeman, *A Wanderer in Inca Land*, 1948.

2. Cap. of the above dept, situated in a small valley some 11,200 ft above sea level and nearly enclosed by mts, 360 m. ESE. of Lima. Seat of an archbishop. It was the cap. of the Incas, but inhabited long before their coming, and was captured by Pizarro in 1533, to be superseded later by Lima as the Sp. cap. The chief buildings are the cathedral, the Dominican priory and church (built on the foundations of the Inca sun temple of Coricancha),

the univ. (1672), and a college of arts and sciences. The climate is cool and bracing. C. trades in wool, hides, cacao, rubber, and gold. Cotton and woollen goods, leather goods, soap, and confectionery are manuf. In the NW. of the city, on the hill Sacahuaman, are the ruins of a great fortress of the Incas. C. is connected with the coast and La Paz, the cap. of Bolivia, by a branch line from Juliaca on the Mollendo-Puno railway. Near by are other ruined Inca centres, notably Kenou and Tambo Machay. Pop. 45,150, mainly Indian.

Cuzzoni, Francesca (1700-70), lt. singer, b. Parma. She was trained and made her debut in Italy, but her first success was in London, where she appeared in Handel's *It. Opera Company* in 1722. Her jealousy was aroused by Faustina Bordoni (afterwards the wife of the composer Hasse), whom Handel engaged in 1726, with the result that she retired in 1728. She went to Vienna and soon after to Venice, where she again encountered Bordoni. In 1734-6 she was back in London, where she reappeared in 1750 with no voice left and without success. She d. in great misery and poverty at Bologna.

Cyanamide, $\text{NH}_2\cdot\text{CN}$, is a white crystalline solid melting at 40°C . Its chief point of interest is its power of forming metallic derivatives in which the two hydrogen atoms are replaced by an atom, or atoms, of a metal. The prin. metallic C. is calcium C. or 'Kalkstickstoff,' $\text{CaN}\cdot\text{CN}$, which is made by heating calcium carbide to a high temp. (about 1100°C .) in a current of nitrogen: $\text{CaC}_2 + \text{N}_2 = \text{CaN}\cdot\text{CN} + \text{C}$. The crude substance is black in colour, owing to its contamination with the carbon produced at the same time. It contains about 20 per cent of nitrogen, all of which is ultimately liberated as ammonia by the action of water. This reaction explains the use of calcium C. as a fertiliser, since the bacterial soil flora are able to convert the ammonia into nitrates, which are vital to plant growth. Agric. practice has shown that calcium C. is best adapted to soils that contain plenty of lime. Calcium C. is also used to some extent in the manuf. of ammonia for chemical purposes. In this case the calcium C. is decomposed by steam. It is further employed in the industrial preparation of other chemicals, e.g. urea and sodium cyanide, though its agric. use is by far the most important. The conversion of atmospheric nitrogen into a nitrogenous compound, such as calcium C., is known as the *fixation* of nitrogen, and since natural supplies of nitrates (e.g. Chile saltpetre) will become exhausted at no very remote date, the world's food supply will then depend upon fixation methods, as indeed it already largely does.

Cyanae Insulae, two rocky is. at the entrance of the Thracian Bosphorus into the Euxine. They were called *Planctae* and *Symplegades* because they were floating is. which struck together against ships, thus destroying them. They became stationary after the Argonauts had sailed safely past them.

Cyanic Acid ($\text{HO}\cdot\text{CN}$), strongly acid liquid which can hardly be prepared in a free state, since it decomposes at temps. above 0°C . Forms salts known as cyanates, the most interesting being ammonium cyanate, which gives urea on heating. The formation of urea in this manner by Wöhler in 1828 was the first formation of organic compounds from inorganic sources.

Cyanide of Potassium, see POTASSIUM.

Cyanides are salts of hydrocyanic, or 'prussic,' acid, HCN . Prussic acid itself is hydrogen cyanide. It was discovered in 1782 by the Swedish chemist Scheele. Technically it is prepared indirectly from molasses, but in the laboratory the usual method adopted is the action of dilute sulphuric acid on potassium cyanide, KCN . Prussic acid is a colourless volatile liquid, boiling point 26°C ., with a characteristic smell recalling that of almonds. It is excessively poisonous. Among the C., potassium cyanide and sodium cyanide are the most important. Potassium cyanide is made by the action of ammonia upon a molten mixture of potassium carbonate and carbon, while sodium cyanide is the result of fusion of a mixture of metallic sodium and sodium ferrocyanide. Both are exceedingly poisonous and must be used with the greatest possible caution. Potassium cyanide is used in entomological killing-bottles and also in chemical processes. Sodium cyanide finds application chiefly in the extraction of gold in S. Africa, etc. *Complex C.* are known, including potassium ferrocyanide and potassium ferricyanide (yellow and red prussiates of potash). Those important are the complex silver and gold C. used (in solution) in silver and gold electroplating as the electrolytic liquid. Prussic acid itself is extensively used, under suitable restrictions, for killing pests, e.g. noxious insects, rats in ships, plague germs, etc. For this purpose it is marketed in steel or iron cylinders.

Cyanogen (C_2N_2), colourless poisonous soluble gas, with a smell like that of bitter almonds, produced by heating mercuric or silver cyanide. It occurs as an acid radical in a series of salts called cyanides (q.v.).

Cyanometer, instrument for comparing the shades of the sky, with small variations in construction. The first one was made by Horace Benedict de Saussure (1740-99), a Swiss physicist, and later Arago designed one which consisted of an arbitrary scale of blues on a strip of porcelain. The blue of the sky was compared with the blues of the instrument, but, as might be expected, subjective errors were inevitable. Zollner's photometer, or some modification of it, is more satisfactory. In this a patch of white surface can be illuminated by any colour or combination of colours, and comparison can then be made with the sky or any desired object.

Cyanosis, lividity of complexion accompanied by an engorgement of the capillaries and small veins of the face and lips especially. It is applied especially to the colour in certain cases of congenital disease

or malformation of the heart. Temporarily it may be caused by extreme cold preventing circulation in the exposed parts. It is usually due, however, to some organic effect which prevents perfect oxidation of the blood. Thus in some cases, because the foramen ovale remains open, some blood can pass from the left auricle direct to the arteries without passing through the lungs, or again, a perforation may allow blood to pass from the right to the left ventricle; while C. may be caused by an obstruction in the pulmonary artery or in the lungs, or by heart failure.

Cyanuric Chloride, *see* CHLOROCYANIC ACID.

Cyathea, the genus of ferns which gives its name to the order Cyatheaceae, is to be found in its most highly developed state in tropical climates. The species are arborescent, the stems are often beautifully marked with the scars of fallen fronds, and the plants are a peculiar feature of the vegetation of many lands. *C. arborea*, the common tree fern, is a native of the W. Indies; *C. bulbularis* and *C. dealbata* both grow in New Zealand, and contain a starchy matter used by the natives as food.

Cyaxares (Gk *Kuaxarēs*) (625-585 bc or 634-594 bc), king of the Medes, grandson of Deioces, the founder of the Median Empire. He organised a powerful and well-trained army, with which he waged war against the Assyrians, the Scythians, and the Lydians.

Cybele, **Agdistis** or **Dindymene**, goddess-lover of Attis (q.v.) who was worshipped in Phrygia, and many parts of W. Asia. Her priests were called Corybantes (q.v.). Curetes (q.v.), or Galli. Being the wife of Cronus, and mother of Zeus, Poseidon, and Hades, she was worshipped as the mother of the gods. In Asia Minor she was a nature goddess, or universal mother, and worshipped with wild orgies. In Greece she was identified with Rhea, whose worship originated in Crete. Her cult was introduced into Rome in 204 bc, where she was identified with Ops (Plenty), the mother of Jupiter.

Cybiium, a species of mackerel-like fishes, is also known as *Scomberomorus*, and belongs to the family Scombridae; the tunny and mackerel are near relatives of the species. Fossil remains occur in the Eocene, Oligocene, and Miocene.

Cycadaceae, family of Gymnosperms containing about 75 species of living plants which have a long primary taproot, an unbranched stem covered with leaf-scars, a crown of leathery, often spiny-tipped, leaves at the apex of the stem, and flowers usually arranged as cones. The species are found only in tropical and sub-tropical countries, and the chief genera are *Cycas*, *Zamia*, *Encephalartos*, *Macrozamia*, and *Dioon*.

Cyclades, is. group which forms a dept or *nomos* of Greece. The is. extend SE. from Attica and Euboea and are named after the Gk word for a ring, forming a rough circle round the little is. of Delos. In antiquity a very famous sanctuary of Apollo. The chief is. are Andros, Tenos,

Syros, Myconos, Paros, Naxos, Amorgos, Cos, Cythnos, Seriphos, Siphnos, Melos, Ios, and Thera. Some are of volcanic origin. In appearance they are barren but there are valleys which are intensively cultivated. Wine, cheese, olives, and vegetables are produced; sponge fishing has now declined. The largest tn and only industrial centre is Hermoupolis on Syros. The C. were not affected by the Slav migrations. In the 13th cent. Venetian and Genoese adventurers estab. numerous local, feudal dynasties in the is., which were later taken by the Turks. The latter interfered little and did not settle in the C., which were incorporated in Greece in 1832. Racially the people are among the purest Greeks, and their customs and beliefs are of great interest. Area about 1050 sq. m.; pop. 126,000. *See* J. T. Bent, *The Cyclades*, 1885.

Cyclamen, small genus of primulaeous plants, consisting of about 16 herbs with very handsome flowers; all are to be found in Europe or on the borders of the Mediterranean. *C. europaeum*, the common C., is abundant in Sicily, and is often called sowbread, from the delight it afforded the wild boar as a food. It has been found wild in Britain, but it is probably only an escape from gardens. The plant has an underground corm, and the lobes of the corolla are reflexed. After fertilisation the flower-stalks twist round until they bury the capsular fruits in the ground, where the seeds ripen and germinate and produce other plants. *C. persicum* has a stalk which bends over instead of twisting in the burying of the fruit; *C. hederifolium* is a species the flowers of which exhale a pleasant fragrance. *C. neapolitanum* flowers in summer and autumn in Britain; *C. corymb* and *C. ibericum* in autumn and winter; the ruby crimson *C. repandum* in spring, and *C. europaeum* in summer. Thus C. may be seen in flower in gardens all the year round.

Cyclanthaceae, family of monocotyledonous plants, palm-like in habit and found in tropical America. The chief genera are *Cyclanthus*, *Ludoria*, and *Carludorica*, the latter genus being of interest to Europeans from the fact that the real Panama hats are manufactured from the bleached leaves of *C. palmata*.

Cycle (Gk *kuklos*, circle), in astronomy and mathematical chronology, a period of time in which certain phenomena repeatedly occur in the same order. C.s have been invented as a means of measuring time. The chief are the solar, that of the sun, and the lunar or metonic, that of the moon. *See* CHRONOLOGY; *see also* CALENDAR; INDICATION.

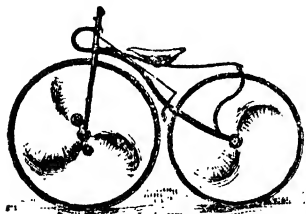
Cycles and Cycling. *History and Development*. It is hard to fix definitely the origin of an invention that has had so continuous a development as the cycle. Velocipedes and machines driven by hand, with 3 or 4 wheels, were known in England at the close of the 18th cent. The earliest 2-wheeled device in the nature of a bicycle appeared in Paris in 1808, while an improvement of the same invention was introduced into England in

1818 by a Baron von Drais, of Mannheim, Germany, and was known as the 'draisienne' and more popularly as the 'dandy-horse.' It consisted of 2 wheels, about 30 in. in diameter, one running in the track of the other, and connected by a wooden beam, which supported the saddle. The front of the beam sustained an arm-rest. Propulsion was obtained by the rider sitting astride over the beam, resting his arms on the arm-rest and



THE 'HOBBY-HORSE,' 1818

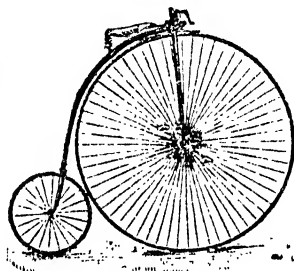
alternately striking against the ground with his right and left foot. This machine, however, speedily became the butt of comic writers and caricaturists, among others George Cruikshank, and succumbed to their ridicule. The dandy-horse was developed, however, by Kirkpatrick Macmillan, a blacksmith of Dumfriesshire, who affixed cranks to the axle of the rear wheel and actuated them by long levers. This invention dates from



THE 'BONESHAKER,' 1870

1840 at latest; but Macmillan's claims were hardly known in his life-time, and the credit of being the originator of the first 2-wheeled single-track mechanically propelled machine was given to Gavin Dalzell, a cooper of Lesmahagow in Lanark, who in 1846 produced a copy of Macmillan's machine. The next development of the cycle took place in the sixties. In 1864 a Frenchman, Pierre Lallement, fitted cranks and pedals to the front wheel of the dandy-horse. The necessity of maintaining balance naturally

led to the introduction of the movable head, which enabled the relative positions of the front and rear wheels to be changed and equilibrium maintained. This invention culminated in the high bicycle known as the 'boneshaker,' on account of the vibration caused by its frame being of wood and its wheels shod with iron tyres. At the same time numerous other devices, including tricycles of various types, were placed on the market under the name of velocipedes. The boneshaker attained a widespread popularity and was used extensively by the upper and middle classes of society. It had, however, little advantage over walking, and its discomfort and danger threatened to cause it to be relegated to the long list of obsolete inventions when a new direction was given to its development. Instead of a front-wheel-driven machine, a reversion was made to rear-driven C., with power transmitted by a chain. This was the origin of the modern safety bicycle, and credit for it is due to J. K. Starley, of Coventry, who produced the type in 1885.



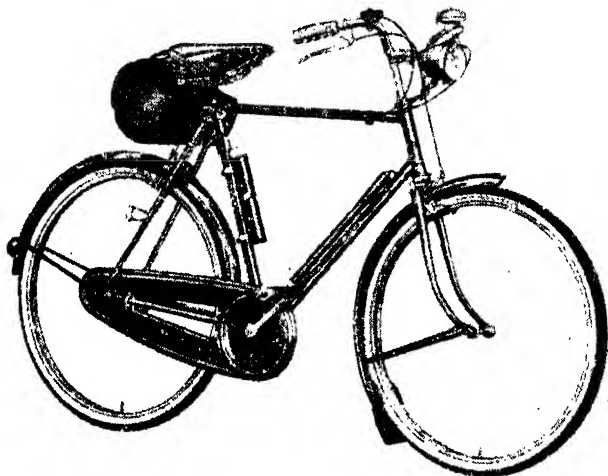
THE 'ORDINARY' BICYCLE, 1887

The greatest step of all was perhaps the invention of the pneumatic tyre by Thompson in 1846 and its 're-invention' in 1888 by J. B. Dunlop, a veterinary surgeon, which secured permanently the position of the bicycle as a vehicle for transport and pleasure. Steadily increasing in popularity, the bicycle underwent an extraordinary boom in the years 1896 and 1897, when company after company was floated. The result, however, was overcapitalisation of the industry, which seriously affected the position of affairs for many years. It would be impossible to record all the innumerable contrivances, many ingenious, many ridiculous, that have been thought of for improving the efficiency of the bicycle. The chain-driven machine was threatened by the bantam bicycle, with front-wheel drive, and by the chainless rear-driven machine. Advocates were found for exceptionally long cranks and exceptionally short cranks. Such devices made no permanent headway, but others firmly established themselves. The tangent spoke diffuses the stress throughout the wheel, and has quite ousted the old direct spoke. Plunger or tyre brakes have given way before the

modern rim and hub brakes operated either by fixed rods or cables. Most cyclists who ride to business and for pleasure use a free wheel. Some time trialists and all track cyclists have a fixed wheel, but for massed-start racing on the open roads and on circuits, variable gears are used and are usually of the derailleur type. Hub gears are popular with many non-racing cyclists as this type of gear usually gives 3 or 4 alternative ratios. With the derailleur gear up to 5 ratios can be obtained with a single chain ring, and with a double one twice the number. In practice, many racing cyclists have 10 gears by fitting a double chain ring with 5 sprockets on the rear hub. Various models of saddle are available, the choice

the practice to fit this tube horizontal. Finally in the shape of the frame was a long time in being reached, but even now novel shapes are still produced in an endeavour to make a better frame. The tubes of a frame can either be welded together or joined by lugs which are used on a brazed frame. From the engineer's point of view the lady's machine is less satisfactory, as an open frame is used. Only keen women cyclists use frames similar to those used by men. Tandem cyclists and tricyclists are still to be seen in varying numbers. Their machines are usually used for touring and racing as they are unsuitable for business riding.

Manufacture. Most cycles used in this country are of Brit. manuf., although some



The Raleigh Cycle Co. Ltd.

A MODERN CYCLE

Gent's Sports Tourist Model.

of saddle depending on the rider. Some saddles are narrow and hard, others are broad and well sprung. According to law, 2 brakes must be fitted to every cycle and a fixed wheel is deemed to constitute a brake. Front and rear lamps must be fitted during the hours of darkness together with a reflector, all of which must conform to the existing regulations. Tubular tyres are often fitted to the wheels of racing cycles instead of the normal tyres and inner tubes. A tubular is a tyre with the inner tube contained inside it, the whole being sewn so that it can be quickly taken from or fitted to wheels. The diamond frame has become so familiar that it is possible to regard it as the permanent form; originally made with the top tube sloping upwards towards the head, it has now long been

racing cyclists prefer Continental machines and accessories. At the end of the last cent. an attempt was made to place large quantities of Amer. machines on the Brit. mkt., but without success. Now the U.S.A. provides Brit. manufacturers with one of their main export mkrts. The cycle industry in this country is mainly based around Nottingham and Birmingham, and the machines produced are exported throughout the world and are renowned for their high quality.

Cycling as a Sport. With the development of the motor industry cycling declined in popularity, but in recent years it has gained in importance. The internationally recognised governing body for cycling in this country is the National Cyclists' Union (N.C.U.), founded in 1878 and the oldest cycling body in the world.

It has almost 30,000 members throughout the Brit. Isles; these include the members of the Scottish Cyclists' Union and the N. Ireland Cycling Federation, which are affiliated to the N.C.U. It governs road and track racing and has an agreement with the Road Time Trials Council (R.T.T.C.) which controls time trialling. National championships are promoted by the N.C.U. and R.T.T.C. at various distances, and records can be estab. for performances for various distances or times as laid down in the rules of each body. Although the N.C.U. caters for touring, a large number of tourists are members of the Cyclists' Touring Club, also founded in 1878. Professional racing has never fl. in this country, although it is a major sport on the Continent, where many 'classic' races are held annually on road and track. The most famous professional stage-race in the world is the Tour de France, which lasts for almost a month. In 1933 the Frenchman Louison Bobet won the event, winning again in the 2 following years. Bobet was also world professional champion in 1934. Many professional tours are held all over the world, but next in importance is the Giro d'Italia. The 1956 race, won by Charly Gaul (Luxembourg), has gone down in cycling hist. as the most gruelling ever held owing to severe cold and snowstorms in the mts. In 1956 Reg Harris (Great Britain) won 5 of the 6 major sprint Grand Prix; the remaining one was won by the other Raleigh professional cyclist, Cyril Peacock (Great Britain). The Peace Race, held from Warsaw through Berlin to Prague one year, and in the reverse direction the next, lasts for almost a fortnight and is recognised as one of the most arduous stage-races. In Aug. of each year a series of world championships is held in one of the European countries. Amateur and professional riders each have their own sprint, pursuit, and road-race titles; there is also a professional motor-paced race, together with cyclo-cross and cycle ball championships. At the end of 1956 all women's world records were held by Russians and most of the men's records by It. riders. Many countries are now showing an interest in cycle racing, amongst them the U.S.A., the Rep. of I., and Russia, and competition may shortly be greater than ever before. The professional winner of a world championship receives more and better contracts, and the amateur rider gets a chance to break into professional cycling. The amateur riders produced in Great Britain in recent years have demonstrated that the standard of riding is steadily improving and that Britain is once again considered to be a leading cycling nation. Apart from the achievements of Reg Harris and Cyril Peacock as professionals, Norman Shell was pursuit champion in 1955, and at the 1956 Olympic Games Great Britain won 1 silver and 2 bronze medals.

World champions for 1956 were as follows:

Sprint: Professional, A. Maspes (Italy); Amateur, R. Rousseau (France).

Pursuit: Professional, G. Messina (Italy); Amateur, E. Baldini (Italy).

Road Race: Professional, R. Van Steenberghe (Holland); Amateur, F. Mahu (Holland).

Motor-paced: Professional, G. French (Australia).

Cycling in Warfare. The cyclist before 1914 proved his military value rather by experience gained in manoeuvres than in actual warfare. His value was considerable where good roads were to be found, and an early type of army machine was the quadricycle which had a machine-gun mounted on it. At the commencement of the First World War the War Office realised the value of the cycle, and what had hitherto been a section attached to an infantry unit became the Army Cyclist Corps. In the Second World War sev. armies produced folding cycles for the use of their paratroops after making a landing in enemy ter.

See A. Davis, The Velocipede: Its History and Practical Hints How to Use It, 1869; R. J. Meeredy and G. Stoney, The Art and Pastime of Cycling, 1895; H. G. Wells, The Wheels of Chance, 1896; S. Wright, Everybody's Cycling Law, 1903; W. F. Grew, The Cycle Industry, 1921; G. H. Stancer, Tips for Cyclists, 1925; W. Fitzwater Wray, The Kikkos Papers, 1927; J. T. Lightwood, The Romance of the Cyclists' Touring Club, 1928; K. Thorenfeldt, Round the World on a Cycle, 1929; H. W. Bartleet, Bartleet's Bicycle Book, 1931; N. Spencer, The Art of Cycling, 1948; H. H. England (ed.), The Second Patterson Book, 1952; Reg C. Shaw, Cycling, 1953; C. R. Woodward, Scientific Training for Cycling, 1954. Journals are Best Sport (ann. review of the National Cyclists' Union); Courreur (bi-monthly); Cycling (weekly); Cycling Manual (ann.); Cyclists' Touring Club Gazette (monthly to members); Kikkos, the Cyclists' Annual; Wheelsport (National Cyclists' Union, monthly).

Cyclic compounds, see RING COMPOUNDS.

Cyclitis, inflammation of the ciliary body. See EYE.

Cyclobarbitone, see BARBITURATES.

Cyclograph, also Arcograph or Curvograph, instrument for drawing a curve without reference to the centre. It is usually formed of an elastic strip, which is adjustable to a given curve, and serves to transfer the latter to another plat or another place on the plat.

Cyclone, region of low barometrical pressure. In modern meteorological usage, the word is restricted to the intense 'revolving storms' of the tropics, and in temperate lats. areas of low pressure are called depressions or lows (see METEOROLOGY). The term C. covers storms in the Indian Ocean, the Bay of Bengal, and the Arabian Sea; but such storms are called hurricanes (q.v.) in the Gulf of Mexico, the W. Indies, the Florida coast and the U.S.A. generally, typhoons (q.v.) in the China Sea and around Japan, and baguios in the Philippines. The tropical C. is characterised by a sharp fall of pressure from

the outer edge of the storm to the centre, with nearly circular isobars. Winds of great strength blow counter-clockwise, in the N. hemisphere (clockwise in the S. hemisphere), around the central area, or 'eye', where for a few square miles calm prevails. C.s are seasonal, developing chiefly towards the end of the hot seasons, but the number reported varies considerably from year to year. For details see HURRICANE, TORNADO, and TYPHOON.

Cyclopean Masonry, in primitive Gk architecture (e.g. at Tiryns and Mycenae), archaic masonry composed of enormous and irregular blocks, fancifully attributed to the mythical race of giants, the Cyclopes; also a loose term for any masonry composed of large and irregular blocks.

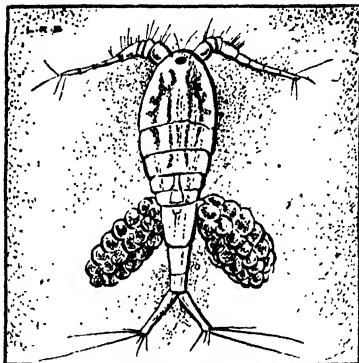
Cyclopes (Gk 'round-eyed'), according to Homer a lawless band of Sicilian shepherds, gigantic in size, who despised Zeus and caught and devoured human beings. Their king, Polyphemus, had only one eye; hence the whole race were so described by later writers. According to Hesiod they were three, Arges, Brontes, and Steropes. They were the sons of Uranus and Gaia and were Titans. They were hurled into Tartarus by Cronus, but delivered by Zeus, whose servants they became, forging his thunderbolts and armour. They also made a shield for Pluto and a trident for Neptune. Ultimately they were destroyed by Apollo, for forging the thunderbolt with which Zeus killed Aesculapius. In a later tradition, owing to their connection with certain volcanoes they were regarded as the servants of Hephaestus (Vulcan), in whose workshops in Aetna, Lemnos, and Lipari they worked. The C. were worshipped as gods, and a temple dedicated to them stood in Corinth. The walls of Mycenae and other Gk towns were called 'cyclopean' on account of their strength. According to Strabo, the C. were builders from Thrace or Lycia, who settled in Argolis.

Cyclops, genus of copepod crustaceans, represents the fresh-water family Cyclopidae. The species are very numerous and minute.

Cyclopteridae, the family name of the fishes known popularly as lump-suckers from the frequent presence of a sucking disc formed from the united ventral fins. *C. lumpus*, the cock-and-hen paddle, is found on Brit. coasts.

Cyclostomata (Gk. *kuklos*, circle, *stomata*, mouths), or **Marsipobranchii**, name given to a class of vertebrate animals usually grouped with the fishes, but separated from them by various characteristic features. The species are eel-like and generally marine, with a gristly skeleton, persistent notochord, scaleless skin, jawless suctional mouth, straight intestine, simple heart, with the gill filaments set on the inner walls of a series of gill pouches and with a single, median nasal opening. The smooth skin is very slimy, and the suctional mouth is used as an organ of attachment when the C. fix themselves to their prey. They dwell in the depths of the sea or in rivs., and many are parasitic

in habit. After attachment to their prey (generally other fishes) the flesh is rasped off by the piston-like movements of a toothed, muscular tongue. The 2 best known species are *Myxine glutinosa*, the common hag-fish, and *Lampetra fluviatilis*, the fresh-water lamprey. They occur in temperate regions of both hemispheres, and in length vary from a few in. to 2 ft.



CYCLOPS

Cyclotron, machine devised by O. E. Lawrence and Livingston in 1931 for producing a stream of electrically charged atoms or nuclei travelling at a very high speed. It consists of an evacuated enclosure lying between the flat, circular pole pieces of a large electromagnet. Within this enclosure are two 'dees', rather like the two halves of a flat closed tin of polish which has been divided along a diameter, i.e. shaped like the letter D. An alternating electric field is set up between the dees, and charged atoms are released between them. The electric field accelerates each atom to a high speed, and after the atom has passed out of the region between the plates it enters the dee itself where there is no electric field but where the magnetic field causes it to travel in a circular path about the axis of the pole pieces of the magnet. After it has traversed a semi-circle the atom is again in the space between the plates, and if the electric field is now reversed the atom is not retarded, but is further accelerated. It now traverses another semicircle of larger radius because of its increased speed, returning to the space between the plates at a time when the electric field has again been reversed, and receiving a further impetus. The time to traverse one half-circle depends only on the nature of the particle and the (fixed) magnetic field. In this way the speed of a stream of charged atoms is gradually built up until their velocity is enormous, and they are travelling near the edge of the circular enclosure. The stream is allowed or caused to pass out at one point near the edge, and to fall on a target of a

suitable material, where it may produce atoms of other elements (see ATOM, ATOMIC STRUCTURE). Many of the atoms formed by the collisions at the target are radioactive. In this way radioactive types of elements such as phosphorus can be produced. These are of value for the information they afford about processes occurring in living organisms, for if they are mixed with food the subsequent hist. of the atoms can be followed by observing their radioactivity. Concentrated radioactive materials can also be accumulated for other purposes such as the treatment of cancer, etc. The cyclotron can be used to produce protons with energies up to about 10 MeV (see ELECTRON VOLT), for pole piece diameters of about 60 ins., without undue difficulty. Near this energy, the relativistic increase of mass of the accelerated particle becomes significant and the faster particles get out of step with the slower particles. The time to traverse one half-circle is $\pi m/Hc$, where m is the mass and e the charge of the particle, and H the magnetic field, and clearly depends on m . Machines have been designed to overcome this difficulty using magnetic fields that vary together with the frequency of the electric fields. See SYNCHROCLOTRON; SYNCHROTRON; BETATRON.

Cygnus: 1. Son of Apollo, changed into a swan.

2. Son of Poseidon, father of Tenes and Hemitheu, and king of Colonus in Troas. His second wife, Philonome, fell in love with her stepson; repelled by him, she accused him to his father, who threw both him and his daughter in a chest into the sea. But the chest was driven to the is. of Leucophrys; the inhab. elected Tenes king, and he called the is. Tenedos after his name. In the Trojan war C. was slain by Achilles.

3. Son of Sthenelus, king of the Ligurians, and a friend and relation of Phaethon, changed by Apollo into a swan, and placed among the stars.

Cydnus, riv. of Cilicia, rising in Mt Taurus and flowing through Tarsus into the Mediterranean. C. was famous for the coldness of its waters, through bathing in which while overheated Alexander the Great nearly lost his life. Frederick Barbarossa was drowned in one of its tributaries (1190).

Cydonia, quince, family Rosaceae, a genus of one species, *C. oblonga*, a deciduous tree, which came to Britain in 1573 from the Mediterranean region, though its ultimate origin is doubtful. See CHAENOMELES.

Cydwel, see KIDWELLY.

Cygnus ('the Swan'), constellation, comprising about 200 stars visible to the naked eye, which lies between Pegasus and Draco. The N. Cross is formed by 8 of the prin. stars in C. The constellation, the brightest star of which is α Cygni (magnitude 1.3), contains many objects of interest, not the least being the star 61 Cygni, a star of the fifth magnitude. This star was the first to have its parallax (i.e. its distance from the earth) calculated, by Bessel in 1838, who announced for it

a parallax of 0.32", since reduced to 0.24", which corresponds to a light-year distance of about 13 $\frac{1}{2}$.

Cylinder, in reciprocating steam and internal combustion engines (q.v.), chamber in which the heat energy of the steam or fuel is transformed into the kinetic energy of the piston. It is usually of cast iron or steel, but in modern i.c. engines the very high temps. make the use of special alloys necessary. A particular problem arises from the alternate heating and cooling during the stroke which, owing to the high frequency of alternation, is confined to a thin skin of the inner surface. In steam engines the C. is surrounded by a steam jacket, in water-cooled i.c. engines by a water jacket; in air-cooled engines the outer surface is provided with metal ribs.

Cylinder, surface traced out by a line moving parallel to its original direction and always passing through the circumference of a curve. The term is also applied to the solid contained by the surface and two parallel planes intersecting it, and in particular to a right circular C. which may be described by the revolution of a rectangle about one of its sides. The C. is a developable surface, i.e. it may be rolled out to form a plane surface. The section of a right C. formed by cutting the solid by a plane at right angles to the parallel surfaces is a circle; an oblique section gives an ellipse. The volume of a right C. is obtained by multiplying the area of the circular base by the height, that is, volume = $\pi r^2 h$, where r = radius of base, and h = height. The area of the curved surface is obtained from the formula $2\pi r h$, or the circumference of the base multiplied by the height.

Cyllarus, a centaur, killed at the wedding feast of Pirithous. The horse of Castor was likewise called C.

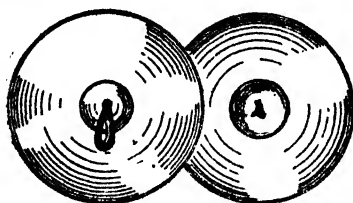
Cyllene: 1. The highest mt in Peloponnesus, on the frontiers of Arcadia and Achaea, sacred to Hermes, who had a temple on the summit, was said to have been *b. there*, and was hence called C.

2. Seaport tn of Elis (q.v.).

Cylon, Athenian who lived in the seventh century bc. He was victor at the Olympic games (640), and tried (630) to make himself tyrant of Athens, taking possession of the Acropolis during a festival. He and his followers were closely besieged, however, and finally fled to the altar of Athena for refuge. Megacles persuaded them to leave this altar, to which they are said to have attached themselves by a string. On doing so, all except Cylon (who escaped) were murdered by their enemies at the altar of the Eumeides.

Cymbals (Lat. *cymba*, hollow vessel), pair of thin, round, metal plates, hollowed in the centre, with a leather strap attached by which to hold them. The sound is obtained not only by clashing them together but by rubbing their edges. It can be loud and harsh, but is also capable of producing a kind of soft swish. The C. are indefinite in pitch. They are often used with the bass drum, esp. in military bands. The original C. were probably

very different in tone, with more of a bell-like sound. Their use is very ancient; they were known among the Egyptians, and were used by the Gks in the worship of Cybele.



CYMBALS

Cymbeline, *see* CUNOBELIN.

Cyme, in botany an inflorescence in which each branch is stopped in its growth after producing a single flower, when it is forced to form lateral branches, which are themselves stopped after forming one flower.

Cynaegirus, brother of the poet Aeschylus, distinguished himself by his valour at the battle of Marathon (q.v.). According to Herodotus, when the Persians were endeavouring to escape by sea, C. seized one of their ships to keep it back, but fell with his right hand cut off.

Cynanchum, family Asclepiadaceae, genus of twining herbs, pollinating their flowers by trapping and holding insects for a time. *C. acuminatifolium*, the Mosquito Plant, or Cruel Plant, of Japan, *C. acutum*, S. Europe, are hardy, white-flowering border plants; *C. formosum*, Peru, a greenhouse climber with pale green flowers.

Cynara, Mediterranean genus of composite plants, contains the two well-known plants, the artichoke and the cardoon. *C. scolymus*, the artichoke, has long been cultivated as a kitchen garden plant. *C. cardunculus*, the cardoon, is eaten like celery.

Cynnewulf (8th cent.), poet, *b.* probably Northumbria. Nothing definite is known of his life, but it is clear that, unlike Cedmon (q.v.), the other prin. early Eng. poet, he was an educated man, familiar with the liturgy and literature of the Lat. Church of his day, and his poetry shows considerable imaginative power. He wrote alliterative verse in the Northern dialect of O.E. Formerly many poems were attributed to him, but it is now agreed that only 4 are certainly his. They are *Elene* and *The Fates of the Apostles*, preserved in the Vercelli Book at Vercelli in N. Italy; and *The Ascension* and *Juliana*, found in the Exeter Book, which is in the possession of Exeter Cathedral. In all of these C.'s runic 'signature' is interwoven with the verse. The former 2 poems were ed. by G. P. Krapp, 1932, and the latter 2 by G. P. Krapp and E. V. K. Dobbie, 1936. Of them all, the finest is *Elene*, which describes the finding of the Cross by the Empress Helena, mother of Constantine the Great. *The*

Ascension is the 2nd part of a long work, *Christ*, which is commonly held to be the work of 3 different authors. *See* C. W. Kennedy, *The Poems of Cynewulf translated into English Prose*, 1910; K. Sisam, *Cynewulf and his Poetry* (Brit. Academy lecture), 1933.

Cynics, The, sect of Gk philosophers deriving from the school of Antisthenes (q.v.). Their name has been said to have arisen from the Cynosarges (q.v.), where Antisthenes taught; but it is more probably based upon the nickname (*kuōn* = dog) of Diogenes of Sinope (q.v.). For the early Cynics (e.g. Diogenes, Crates, and Zeno) virtue was the highest good, learning and pleasure to be despised. Later members of the school (e.g. Demetrius and Demonax) forgot the saving grace of self-control and degraded human life to a mere brutish level. *See* R. Dudley, *A History of Cynicism*, 1937.

Cynodon, a small genus of Gramineae, found in S. Africa and Australia. *C. dactylon*, the dog's tooth, or Bermuda grass, is, however, world-wide in distribution, and in England grows on the shores of Devon and Cornwall. *C. linearis* is the durtgrass of the E.

Cynoglossum, family Boraginaceae; genus of cosmopolitan biennial or perennial herbs. *C. officinale*, hound's-tongue, and the more rare *C. germanicum*, green hound's-tongue, are native to Britain and Europe; both biennial, with disagreeable, mouse-like smell, and onetime medical uses against scrofula. *C. amabile*, China, is a popular garden biennial.

Cynoidea, one of the sections of the Carnivora (q.v.), consisting of dog-like animals. There is a single family, the Canidae, and the species is distributed over the whole world, with the exception of New Zealand, and many of their fossil remains have been found. The fox, wolf, dingo, prairie wolf, and all varieties of dogs, wild or domesticated, belong to this group.

Cynomorium Coccineum, the single species of its genus in the family Balanophoraceae, is a Mediterranean plant. By old herbalists it was called *Fungus melitenensis*, and was valued for its astringent properties, but it is now a rarity and an object of curiosity to botanists. The discovery of the medicinal properties of this parasitic plant dates from remote times, and in 1740 the knights of Malta set so high a value on it that they guarded the passage to the spot where it grew with the strictest jealousy.

Cynosarges, gymnasium, sacred to Heracles, outside Athens, for the use of those who were not of pure Athenian blood; here taught Antisthenes (q.v.). *See* CYNICS.

Cynosephalae (dogs' heads), two hills of Thessaly in Greece, near Larissa. Here in 197 BC the Rom. consul, Flaminius, defeated Philip of Macedon.

Cynossema, 'Dog's Tomb,' promontory in the Thracian Chersonesus, so called because it was supposed to be the tomb of Hecuba (q.v.), who had previously been changed into a dog.

Cynosure (Gk *kynosoura*, a dog's tail), name for the constellation of the Little

Bear, which contains the Pole Star. The Phœnician mariners steered their course by this constellation, while the Greeks steered by the Great Bear. The name has been transferred to anything attentively observed.

Cynosurus Cristatus, the crested dog's-tail grass, or gold-seed, is a well-known pasture-grass of the old world, and flourishes in Britain. The roots grow deeply and the plant thus remains green in dry weather when other grasses are burnt.

Cynthia, one of the many names of the Grk goddess Artemis (q.v.), taken from Mt Cynthus (q.v.).

Cynthus, mt of Delos, celebrated as the bp. of Apollo and Artemis, who were hence called Cynthius and Cynthia respectively.

Cyparissus, son of Telephus, who inadvertently killed his favourite stag, and, seized with immoderate grief, was changed into a cypress.

Cyperaceæ, family of about 3000 glumaceous monocotyledons, having much the appearance of grasses. In England a large number of the species are called sedges, and are employed in the manuf. of 'rush' mats and bottoms for chairs. Genera include *Carex*, *Cladium*, *Cyperus*, *Eriophorum*, *Blysmus*, *Hypolytrum*, *Scripus*, *Isolopis*, etc.

Cyperus, genus of the family Cyperaceæ, which contains about 500 species of rush-like plants found in all warmer regions but not in cold. *C. esculentus*, chufa, of S. Europe, India, etc., is grown for its edible roots. *C. papyrus*, the Egyptian paper reed, is the source of the papyrus of ant. times. *C. longus*, galingale, and *C. fuscus* are natives of Britain.

Cyphal, see CHERTERIA.

Cypræides, family of gastropod molluscs which contains the cowry (q.v.). The species are often large and beautiful, and most of them dwell in warm seas. Besides the existing species, of which there are 2 or 3 hundred, fossil remains have been discovered from the Upper Jura.

Cy-près, term used in connection with charitable trusts or uses (q.v.). Where an instrument creating a trust discloses an intention to benefit charitable purposes generally, or, as it is called, 'a general intention of charity,' without mentioning any particular charity or charitable purpose; or specifies a particular charitable purpose which either cannot be carried out, as for example where an institution intended to be benefited has ceased to exist, or which does not exhaust the whole of the trust fund, the chancery div. will itself declare the charitable purpose to which the trust fund or surplus (as the case may be) is to be devoted; and in so doing it will efface the settlor's intentions as nearly (cy-près) as possible. Where it is impossible to carry out any charitable purpose approximating to that in the mind of the settlor, the court may construe the settlor's intention by the light of other charitable trusts (if any) in the same settlement. See Snell, *On Equity*; and Hanbury, *Modern Equity*.

Cypress, or *Cupressus*, genus of coni-

ferous plants, of which all the 12 species are evergreen shrubs or trees, and are natives of N. America, the Mediterranean, and Asia. *C. sempervirens*, the common or upright C., is a plant of gloomy aspect but fragrant smell; it is sometimes cultivated in Britain, but the climate is too damp and cold for it to flourish. It has been identified as the C. of the Scriptures, and the cross of Christ is believed by some to have been made from this tree; but, on the other hand, the Heb. word for the C. of Scripture, *terzah*, is derived from *taraz* connoting 'strength,' so that there is means of identifying it, and indeed the Heb. word for C. is *berosh*, often trans. cedar or fir. The variety *C. horizontalis*, the spreading C., is a more hardy plant than the common C., and its graceful spreading branches make it a beautiful object. *C. lusitanica*, the cedar of Goa, is a drooping species, and its leaves have a singularly glaucous colour. *C. funebris* is a native of China and bears weeping branches; *C. lawsoniana* grows in Upper California and yields good timber; *C. fragrans* is often cultivated, but occurs wild in N. America; *C. macrocarpa*, the Monterey C., is a hardy species found in California; *C. nootkatensis* (from Nootka Sound) grows in N. America, attaining a height of over 100 ft. See FORESTRY.

Cyprian (Cyprianus) Thascius Caecilius (c. AD 200-58), St and Father of the Church, was b. of heathen parents, but in 245 was baptised. Thereupon he gave all his wealth to the poor, so that the 'acclamation' and 'friendly violence' of the whole city obliged him in 248 to accept the bishopric of Carthage. When Decius began his ruthless persecutions in 250, C. was greeted everywhere with pagan cries of '*Cyprianum ad leonem*' so that he sought safety in flight. At Gallus's accession he returned to Carthage, 251, and was soon drawn into the question of the re-baptism of heretics and the readmission into the Church of those who had fallen away during the recent persecutions. C. was inclined to lenience, whereas Novatian wished their entire exclusion. From C.'s letters the reader obtains a lively picture of the struggle of the early Church and the bitter animosities aroused by questions of doctrine and discipline, also an insight into the poetic feeling and tenderness of the writer. C. did not hesitate to dispute with his 'brother' Pope Stephanus, and in 256, at a synod in Carthage, he openly declared that he recognised no judicial authority of the Rom. over the other Christian bishops, who were substantially his equals. On the proclamation of Valerian as emperor in 258, C. once more had to flee. In the same year he bravely and gladly suffered martyrdom. 'God be thanked!' he cried on hearing his sentence, faithful to his saying that 'a priest of God . . . may be put to death but cannot be overcome.' His *De Catholicæ Ecclesiæ Unitate* is of peculiar interest and importance in the history of the papal claims, though the authenticity of the passages favouring them is disputable. See E. W. Benson, *Cyprian, His Life, Times and Work*, 1897;

E. Leigh-Bennett, *Handbook of the Early Fishes*, 1920.

Cyprinidae, a very large and much subdivided family of fishes of the order Ostariophysi, is typified by the carp. The family are bony fishes with scaly bodies, naked heads, and toothless mouths. They are to be found in fresh water of the old world and N. America, and about 1300 have been classified. Their diet is chiefly vegetarian, but a few are animal-feeders. The carp, goldfish, minnow, dace, loach, chub, roach, tench, and fresh-water bream are a few well-known representatives of the family.

Cyprinodontidae, a family of fishes of the order Microcyprini, somewhat resemble carps, but have teeth in both jaws, no barbels, and the head and body are covered with scales. The most curious genus is *Anableps*, in which the iris of the eyes has 2 pupils; the fishes swim with the head half out of the water, and the lower pupil is adapted for sight in water, the upper for aerial vision.

Cypripedium, a genus of the Orchidaceae, contains over 50 species of graceful and beautiful plants, mostly inhab. of N. America and N. India. They have a curious method of pollination, which is effected usually by bees. *C. calceolus*, the lady's-slipper orchid, is found rarely in woods of N. England. It has a creeping rhizome, broad ovate leaves, and the perianth is reddish-brown in colour. The labellum, however, is yellow and slipper-like, the edges being turned inwards.

Cyprus, 3rd largest is. in the Mediterranean, 60 m. W. of Latakia in Syria and 46 m. S. of Cape Anamur in Turkey, lies between N. lat. 34° 34' and 35° 42', and E. long. 32° 16' and 34° 36'. Its length is 138 m., average width 45 m., area 3584 sq. m. It is an attractive country of plains and mts surrounded by blue seas and wide horizons. The NE. headland, Cape St Andrews, forms the extremity of a long and narrow peninsula. The fertile plain of the Mesaoria stretches across the centre of the is. Once covered with forest it is now almost treeless. The surface is broken here and there by tablelands of rock, 100 to 200 ft. high. There are 2 mt systems. The N. coastal chain, or Kyrenia mts, of which the highest peak is Kyparissovouno (3357 ft), is steep and craggy rather than lofty; its height diminishes steadily towards the E. The mts in the SW. extend over a third of the is. Among them are Chionistra (6403 ft), the highest point in C., Adelphi (5305 ft), Papoutsa (5124 ft), and Machaira or Chionia (4674 ft). Holiday resorts have been developed among these mts and the Gov. of C. moves to Troïdos during the hot weather. The climate of C. is Mediterranean in character and is healthy, though the heat of the plains has always been notorious. Winter, from Oct. to Mar., is the wet season. Rainfall varies from 14 in. in the plain to 40 in. in the mts, the mean ann. precipitation being 19 in. The mean maximum temp. is 78.5° F., the mean minimum 54.7°, and the average ann. temp. about 69°. C. is subject to earthquakes; the most recent

(1953) did severe damage in the Paphos dist. The rivs. are muddy torrents in winter and are dry or reduced to stagnant pools in summer. The largest, the Pedias, on which Nicosia stands, and the Ialías, flow N. and then E. through the plain. There are salt lakes near Larnaca and Limassol. The only other lake of any size, Paralimni near Famagusta, has been drained. Malaria was once prevalent but has recently been eliminated. Locusts formerly did great damage but have been brought under control; there has been no serious visitation since 1915. In antiquity C. was very rich in timber, which was in great demand for shipbuilding. By 1878 wanton destruction, forest fires, and grazing by goats had caused severe deforestation. The British have consistently aimed at re-afforestation, 18 per cent of the area of C. is now forest, mostly Crown reserves. The chief tree is the Aleppo pine.

Geologically C. is not old; the underlying rocks are probably Cretaceous and early Eocene. At times the is. has been submerged and at others joined to the mainland. Limestone and sandstone provide plentiful good building stone. The N. mts contain excellent marbles. The plain is alluvial. Sheet erosion is serious in places, gully erosion less so, and terrace cultivation has long been practised. Agriculture is somewhat backward and is hampered by fragmentation of holdings, water shortage, and primitive methods. Recently much attention has been given to agric. education, improving stock, irrigation, and the development of vil. co-operatives. There is a considerable wine, spirit, and soft drinks industry. C. wine resembles Madeira; the Madeira wine was derived from Cypriot stock. There is little fish in the sea off C. In antiquity C. was famous for copper, a word that may be connected with the name C. The chief exports (annual value about £18½ million) are cupreous concentrates, iron pyrites, cupreous pyrites, asbestos, carobs (used for cattle food), wheat, oranges, potatoes, raisins, chrome, wine, and wool. Imports now cost about £30½ million annually. The budget is about £13½ million and has risen rapidly in recent years. Expenditure on development is about £1 million a year. In 1955 the Brit. Gov. approved a development plan to cost £38 million. Internal communications are mainly by road and there is an extensive motor bus service. The railway from Famagusta through Nicosia to Evrykhon is now disused. There are regular shipping services to the prin. Mediterranean ports. Nicosia airport is an important junction for Middle E. air routes. Cable lines connect Larnaca with Egypt and Syria. The old Turkish weights and measures are in common use. The C. £ is equal to the £ sterling and is divided into 1000 mils.

The prin. tns. which are the capitals of the administrative dists., are Nicosia, the seat of gov. (estimated pop. in 1954, 43,000), in the centre of the plain; Famagusta, the chief port, on the E. coast (20,900); Limassol (27,300) and Larnaca, (16,600), ports on the S. coast; Paphos

(6600) and Kyrenia (3400). There are 10 rural municipalities and 617 vills. Of the latter most are inhabited by Greeks, about 100 by Turks and about 150 by both Greeks and Turks. Vill. affairs are controlled by mukhtars and councils nominated by the gov. The pop., estimated at 527,000 in 1957, consists mainly of Greeks. They belong to the Church of C., an autocephalous branch of the E. Orthodox Church, subject only to the archbishop of C., under whom are the metropolitans of Paphos, Citium (Larnaca), and Kyrenia. In the vil. a distinctive dialect of Gk is spoken. 18 per cent. of the people are Turks and Muslims, mostly descended from immigrants from Asia Minor who came with or soon after the Ottoman conquest. They speak Turkish or, in some vills, Greek. Their religious leader is an elected Mufti. There are also some Armenians, principally in Nicosia, most of whom came as refugees from Turkey, and Maronites, originally Arabic speaking immigrants from Lebanon.

C. is of great archaeological interest, being very rich in Bronze Age, Hellenistic, Rom., and medieval remains. The superb Gothic cathedrals of Nicosia and Famagusta are now mosques. The 16th cent. walls of both tns survive, and in the Kyrenia mts are the ruins of 3 medieval castles and the great abbey of Bellapais. There is an excellent museum in Nicosia.

Nothing is known of Palaeolithic C. In Neolithic times the W. coasts were inhabited by a short-headed race. In the Bronze Age, which began about 2600 BC, a long-headed race akin to the people of Asia Minor had flourishing settlements in the E. half of C. Greeks began to colonise the is. before 1200; Phoenicians followed between 1000 and 800. At the time unknown languages were spoken in C. and a distinctive script, which is still undeciphered, was in use. C. was divided among petty rulers of whom one of the most important was the priest king of Paphos. The is. was subject in turn to Egypt, Assyria, Persia, and Alexander the Great. Hellenisation was completed under the Ptolemies. C. followed Egypt into the Rom. Empire. Paphos became the cap. and chief port; Cicero and Cato the younger were among its Rom. governors. Paul and Barnabas visited C. and converted the proconsul Sergius Paulus. Because of this apostolic foundation the Church of C. is independent; the Archbishop is consecrated by his suffragans. In the 7th cent. the coasts suffered much from Arab raids; the Muslims levied tribute but did not colonise C. Richard I of England conquered C. during the Third Crusade. He sold it to Guy de Lusignan, former king of Jerusalem, whose successors ruled C. as independent kings. Feudalism and the Latin Church were estab. In the 13th and 14th cent. C. was very prosperous. In 1426 the Mamelukes of Egypt invaded C., defeated and captured King Janus, pillaged Nicosia, and made C. tributary. In 1489 Venice compelled Queen Catherine Cornaro, widow of James II, to cede C. The Turks conquered the is. in 1570-71, besieging and

taking Nicosia and Famagusta. Turkish rule was uneventful. The serfs were freed and the Orthodox Church restored, but taxes were oppressive and with the decline of the empire there was much misgovernment. The pop. declined until the 18th cent., since when it has risen steadily. The Gk archbishop was usually the most powerful person in C. but in 1821 the governor, frightened by the Gk rebellion, executed the archbishop and metropolitans. The Church regained much influence later. In 1878 Disraeli forced the Sultan, then in imminent danger from Russia, to cede to Britain the administration but not the sovereignty of C. In 1914 C. was annexed. Turkey recognised the annexation by the Treaty of Lausanne (1923) and in 1925 it was made a Crown colony. There had been a movement for



Nancy Jenkins

VILLAGE SCENE IN CYPRUS

A priest of the Autocephalous Church.

union with Greece (*enosis*) before 1878, though there was no armed resistance to the Turks. Many Greeks and some Brit. hoped that Britain would grant C. to Greece as had been done with the Ionian Is. The *enosis* agitation was always strenuously opposed by the Turks both in C. and in Turkey. In 1915 C. was offered to Greece in return for armed intervention in Serbia. The offer was rejected and withdrawn. In 1931 Gov. House in Nicosia was burnt by demonstrators. Troops were sent to C., 2 metropolitans were banished, and the partly elected legislative council was suppressed. There was much popular sympathy with the movement in Greece but the Gk Gov. remained aloof from the dispute. In C. the authorities assumed wide powers to ban newspapers and forbid meetings. In 1946 the Brit. Gov., though refusing to discuss *enosis*, summoned a consultative assembly to discuss a constitution. The

Gk Cypriots were divided. The Left Wing parties, as well as the Turks, were willing to accept the Brit. proposals. The Right Wing, led by the Church, rejected everything but *enosis*. The assembly was dissolved in 1948. In 1949 the Communists of C. decided to abandon the demand for self-gov. and to support the Right Wing claim. In 1950 the Church organised a plebiscite to show the strength of popular demand for *enosis*. Agitation, encouraged by Athens radio, increased steadily and in 1954 Archbishop Makarios III (q.v.) persuaded the Gk Gov. to take the question to U.N.O. The failure of this move led to minor disorders in C. In Dec. 1954 began the transfer of the H.Q. of Brit. land and air forces in the Middle E. from the Suez Canal Zone to C. In April 1955 an organisation called EOKA (initials for Gk words meaning Revolutionary Organisation of Cypriot Struggle) began a campaign of sabotage and murder which still continues. Active terrorists are few and are thought to be led by Grivas, a Gk army officer of Cypriot birth and an extreme reactionary. The Brit. Gov. summoned Greece and Turkey to an abortive tripartite conference in London. In Sept. 1955 Field-Marshal Sir John Harding was made Governor and in Nov. a state of emergency was proclaimed, which continues. In March 1956 the Archbishop was deported to the Seychelles. Documents have since been pub. showing his association with EOKA. Brit. troops have caused considerable casualties to the terrorists whose victims have mostly been not British but Cypriots suspected of pro-British sympathies. In Sept. 1956 the Brit. Gov. sent Lord Haddiffe (q.v.) to C. to prepare a scheme for self-gov. within the Commonwealth which would reserve to the Governor external affairs, defence, and internal security. The proposals were presented in Dec. and accepted by the gov. They provide for a cabinet responsible to an assembly of 36 members, of whom 6 would be elected by the Turks of C. on a separate electoral roll, 6 would be nominated and would include representatives of the small minorities, and the rest would be elected by the non-Turkish Cypriots. Legislation affecting Muslim institutions would require the assent of 4 of the Turkish members. The Governor would nominate a minister for Turkish affairs who would always be a member of the cabinet. Greeks and Turks would be equally represented in the Supreme Court and the control of non-communal education. The Gk Gov. expressed its dissatisfaction. The Turkish Gov. has stated that it would accept the partition of C. into Gk and Turkish areas. In April 1957 Archbishop Makarios (q.v.) was released from exile in the Seychelles. See *Reports* pub. annually by the Colonial Office; W. H. Engel, *Kypros*, 2 vols., 1841; L. de Mas Latrie, *Histoire de l'Île de Chypre sous le règne de la Maison de Lusignan*, 3 vols., 1861, 1852-55; J. Hackett, *History of the Orthodox Church in Cyprus*, 1901; E. Oberhammer, *Die Insel Cypern*, 1903; C. D. Cobham, *Excerpta*

Cypria, 1908; G. Jeffery, *Description of the Historic Monuments of Cyprus*, 1918; C. W. J. Orr, *Cyprus under British Rule*, 1918; H. C. Luke, *Cyprus under the Turks, 1671-1878*, 1921; C. D. Cobham, *Attempt at a Bibliography of Cyprus*, 1929; Sir R. Storrs and C. J. O'Brien, *Handbook of Cyprus*, 1930; R. Gunnis, *Historic Cyprus*, 1936; S. Casson, *Ancient Cyprus*, 1937; Sir G. F. Hill, *History of Cyprus*, 4 vols., 1940-52; D. Alastor, *Cyprus in History*, 1955.

Cypselus, tyrant of Corinth (657-627 bc), was, on his mother's side, connected with the family of Bacchladae, who, having learnt from the oracle that this child was to bring about their downfall, sent messengers to murder him. They were unsuccessful, however, and he eventually succeeded in overcoming them and in making himself tyrant, ruling at Corinth for 30 years.

Cyr, or **Cyrio**, see **GIRG**.

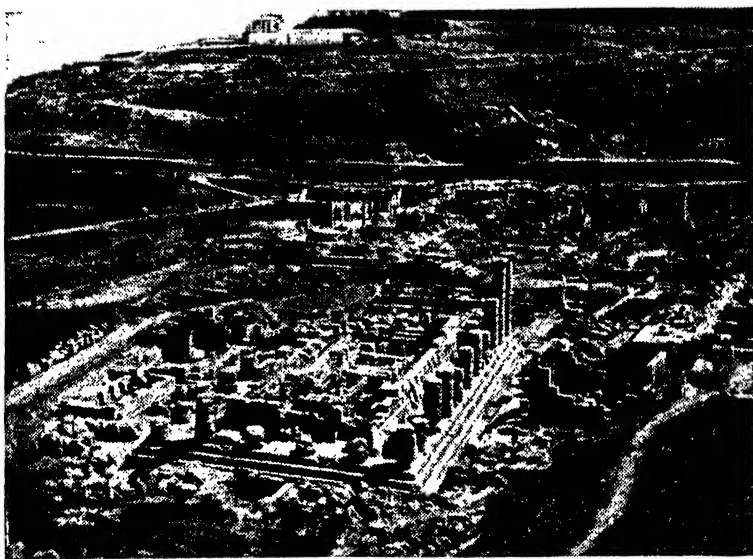
Cyrano de Bergerac, see **BERGERAC**.

Cyrenaica, 1 of the 2 ters., Tripolitania being the other, of which Libya is formed, with an area of about 75,000 sq. m. (excluding the Cupra hinterland zone) and a habitable area of some 14,000 sq. m. Though it has no precise natural boundaries, the ter. which the Italians named C. is a natural unit. Its core is a limestone plateau welded on the S. to the Libyan desert and projecting in a wide arc into the Mediterranean. This core is the Jebel Akhdar, and constitutes the essential C. To the S., E., and the W. are transitional regions which, as they decline down to the level of the desert, gradually take on its character. Though the country is mostly desert, it is generally arable near the coast. The native inhab. are almost all Arabs and Berbers, and the total pop. in 1954 was about 391,328. The inland natives, mostly pastoralists, are distinguished by their general adherence to the Senusiya order of Islam, an order not peculiar to them, though they form by far the most numerous and most compact Senussi group. The Italians were greatly attracted to Jebel Akhdar, and after a provisional administration which lasted from their annexation of Libya in 1912 until 1923, they embarked on a policy of colonisation which proved extremely costly. Olives are cultivated in places, and there are date-palm oases. Great numbers of cattle, sheep, and camels are reared, and barley is grown and exported to Eng. maltsters. C. fl. in antiquity owing to the trade with Central Africa. In 1930 80,000 Arabs with 600,000 head of cattle were forcibly transferred from the inland dists. In 1931 the It. campaign against Senussi Muslims was successfully concluded with the capture of Cupra, the rebel leader, Omar el Mukhtar, being executed. The It. colonisation scheme involved the forcible displacement of the Bedouin by Gen. Graziani, achieved after ruthless fighting in about 1934, by which time the native pop. had fallen from 400,000 to 200,000. The herds suffered even more, the number of sheep being reduced between 1926 and 1933 from 800,000 to

98,000, ~~camels~~ from 75,000 to 2600, goats from 70,000 to 25,000. Not only did the Italians take over the most fertile land of the Jebel Akhdar and coastal plains, but they closed many of the traditional grazing grounds of the Arabs. Scattered over the Jebel and the W. littoral there sprang up thousands of It. farms, ranging from small white houses, with a few ac. of land, to estates of as much as 30,000 ac. C. has an erratic rainfall of 12 in. to 16 in., with a drought every 7 years. There is some well water, and catchments are constructed. The Italians partly completed an ambitious pipe-line to carry water throughout the Jebel from Ain Marra, a spring, to the W. of Derna. In

salve as much as possible of the It. colonisation achievements; but it did not prove easy to induce the Bedouin to follow a settled existence, though the attempt was most successful with Senussi exiles returning from Egypt, where they had shed their nomadic way of life. But in general the majority of the Cyrenaicans have neither the knowledge nor the inclination to continue the work of the It. colonists. Of the total revenue, including grants-in-aid, £1,420,000 (1956) was allocated to C. See R. di Lauro, *Tripolitania*, 1932; K. Holmboe, *Desert Encounter*, 1936; and G. Casserly, *Tripolitania*, 1943.

Cyrenaics, The, school of philosophers,



CYRENE—THE EXCAVATED TEMPLE OF APOLLO

E.N.A.

the Second World War C. became a battle-ground, first between the It. and Brit. forces and later between combined Italo-Ger. forces and the Brit. (For full details and description of the battles in Libya see AFRICA, NORTH, SECOND WORLD WAR, CAMPAIGNS IN.) When C. thus became a theatre of military operations, the It. pop. in tn and country either fled or were removed to Tripolitania, from fear of Senussi vengeance. By the time the Brit. military administration was set up in 1943 normal life had ceased in the colonised areas. The port tns, Tobruk, Derna, and Benghazi, had been wrecked, and irrigation and water pipe-lines destroyed. The administration's first care was the welfare of the natives, and this involved removal of the debris of 2½ years' battles. The next task was to

so called because their founder, Aristippus (q.v.), was a native of Cyrene, where also their peculiar tenets were developed. Their school lasted down to the beginning of the 4th cent. BC. Their articles of belief were drawn up, as it were, by Aristippus the younger. They denied the excellence of virtue, and, as they regarded knowledge as immediate sensation, considered all logic and physical science waste of time. The C. were hedonists, after the manner of the Cynics. It was their pessimism which deterred men from accepting their ideals. Theodoros of Athens, Hegesias, who advocated suicide, and Arete, Aristippus's wife, were adherents of this school.

Cyrene, cap. of the anct Cyrenaica, Africa, was situated near the modern vil. of Grenna, SE. of Cape Ras, a few m. from

the Mediterranean. The anct ter. of C., called also Cyrenaica, included also the Gk cities of Barca, Teuchira, Hesperis, and Apollonia, the port of C. Under the Ptolemys Hesperis became Berenice, Teuchira was called Arsinoë, and Barca was entirely eclipsed by its port, which was raised into a city under the name of Ptolemais. The country was at that time usually called Pentapolis, from the 5 cities of Cyrenaica—Cyrene, Apollonia, Ptolemais, Arsinoë, and Berenice. C. was founded c. 630 BC by a colony from Thera. Their leader, Battus (see BATTIADAE), and his descendants ruled there for 8 generations, after which C. became a rep. Under Augustus Cyrenaica, with the is. of Crete, became a Rom. prov., and the miserable party struggles of the cap. were effectually quelled. In the days of its prosperity C. numbered over 100,000 inhab., had a flourishing medical school, and was noted for its intellectual activities, and as the bp. of Callimachus, the poet, Carnendes and Aristippus, the founder of the Cyrenaics, Eratosthenes, and the elegant Christian writer, Synesius. C. ruins of which (including those of a number of temples) remain to attest its former greatness, carried on a considerable trade with Egypt, Greece, and Carthage.

Cyrenius, Græcised name of Publius Sulpicius Quirinius, who twice held office in Syria, the first occasion being in association with Sentius Saturninus in 9-6 BC. At that time Judea was under Herod, but to all intents and purposes was part of the Rom. world, so that when Augustus ordered a general census it might well have been included. According to St Luke the census that caused Christ to be born at Bethlehem was begun under Quirinius, though he did not personally conduct it. It was made no doubt by native officials, and by the method used it would have taken a long time to complete. Augustus certainly instituted a fiscal reform with especial regard to abuses in the provs. He set out to discover the exact financial resources of the empire and left a written account at his death in AD 14 (Tacitus, *Annals* I, ii; Suetonius, *Augustus*, 28). A census for the purpose was held in Gaul in 12 BC, and in Egypt in 9 BC. There is no reason to doubt the testimony of Luke that such a census was going on in Syria and had reached Judea by the time Christ was born (between 6 and 4 BC). See W. M. Ramsay, *Was Christ born at Bethlehem?*, 1898.

Cyreschata, or **Cyropolis**, city of Sogdiana, on the Jaxartes; the most easterly of the colonies founded by Cyrus, and the extreme city of the Persian Empire. It was destroyed, after many revolts, by Alexander.

Cyril, **Saint** (315-86), was ordained bishop of Jerusalem in 351. It was the time of the Arian controversies, and as C. attempted to steer a middle course he was deposed in 358 by his metropolitan, Acacius, bishop of Caesarea, an action which was ratified 2 years later by the synod at Constantinople. But he was reinstated in his bishopric on the accession of Julian in 361. Expelled again by

Valens in 367, he finally returned to Jerusalem in 378, and attended the second ecumenical council at Constantinople and accepted the Nicene formula there promulgated. His *Catechesis* (Instructions to Catechumens) contains a series of discourses addressed to candidates for baptism and a few to the newly baptised.

Cyril, **Saint** (c. 376-444), of Alexandria, a father of the Church. After some years in the Nitrian desert, he succeeded his uncle, Theophilus, as patriarch of Alexandria in 412. Some measure of the responsibility for the atrocious murder of Hypatia has been attributed to C. by historians, though not by contemporaries. Nestorius, who refused to acknowledge the Blessed Virgin Mary as the Mother of God, was the object of C.'s ceaseless opposition. Anathematised in 430, he was condemned in 431 at the ecumenical council of Ephesus. C. himself was condemned by John of Antioch for his harsh treatment of Nestorius, both depositions, curiously enough, being ratified by the emperor, but C. was soon reinstated. A number of C.'s homilies are extant, besides his defence of Christianity (433). His feast is on 9 Feb. He was declared a Doctor of the Church by Leo XIII. See E. Weigl, *Die Heilsschre des Cyrillus*, 1905; and H. du Manoir, *Docteur et spiritualité chez St Cyrille*, 1944.

Cyril (827-69) and **Methodius** (d. 885), **Saints**, 2 Christian apostles of Thessalonica. C. (Constantine Cypharus), surnamed the Philosopher, and the Apostle of the Slavs, was sent to preach to the Chazars, and later to the Bulgarians. He founded a school at Buda. While in Bulgaria he was taken prisoner, but was released about 862 by the intervention of M., his brother, whom he then accompanied to Moravia. The two invented the Slavonic alphabet, and are said to have been summoned to Rome for employing the Slavonic tongue in the church services. After an understanding had been arrived at with Pope Adrian II, C. remained at Rome, but M. returned to Moravia as archbishop of the church there. He appears to have become involved in quarrels with the Ger. clergy, in consequence of which he was again summoned to Rome in 879 and 881. After the latter date nothing is heard of him, and, in fact, the accounts of the lives of both C. and M. are meagre and contradictory. Their feast is on 7 July.

Cyrnos, Gk name of the is. of Corsica, from which is derived the adjective *Cyrneus*, used by the Lat. poets.

Cyrus the Great (d. 530 BC), founder of the Persian Empire, was the son of Cambyses I and of Mandane, daughter of the Median king Astyages, and the grandson of Cyrus I, and the fourth of a line of kings over Anshan. He thus belonged to a branch of the royal house of the Achæmenides. His boyhood is shrouded in a mass of legend. A grandson of Astyages, king of Media, C. in 550 BC captured Astyages and gained possession of his cap., the anct Ecbatana. Three years later he was face to face with a great

coalition of Egypt, Lydia, Babylon, and the little Gk state, Sparta. But although the famous King Croesus of Lydia had forestalled him by invading Cappadocia, C. early inflicted a crushing defeat on Croesus, captured his cap., Sardis, made Lydia a prov. of his Persian Empire, and, according to Herodotus, was only prevented from burning the Lydian king alive by his admiration of his philosophy. C.'s next step was the subjugation of the Carians, Lycians, and Ionians of Asia Minor, who nevertheless offered a stubborn and gallant resistance. C. then turned to the E. and reduced Drangiana, Arachosia, Margiana, and Bactria; the Jaxartes, along which he built fortified tns, becoming the N.E. limit of his state. In 538 bc the great Babylonian empire crumbled to pieces before the Persian conqueror. King Nabonidus of Babylon had been wont to pass year after year in idleness at his cap., whilst his son led the army in Akkad (N. Babylonia). It was in Akkad alone that C. met any serious opposition, for Babylon fell without resistance. Nabonidus *d.* almost immediately after this, and C. took the title 'king of Babylon, king of the land.' With Babylon fell also the Babylonian provs. in Syria, so that the Jews were now under C.'s sway. In pursuance of his policy of religious conciliation he allowed the latter to return to Palestine and to rebuild their temple at Jerusalem, and for this generous act of deliverance from captivity he is referred to in the O.T. as 'the Shepherd and the Anointed of Jehovah.' Pressure from nomads on the E. frontier forced C. to resume operations against them. After putting his son, Cambyeses, in charge of preparations for an expedition against Egypt, he set out for the E. and was shortly afterwards killed in battle. The empire founded by C. extended from the confines of Egypt to the banks of the Indus and Jaxartes, from the Persian Gulf to the S. of the Caucasus and Caspian on the N. C. was a splendid warrior and no mean statesman: in his humanity he far outstripped his contemporaries, for he never sacked a city, and spared alike captives, kings, and people. The Greeks honoured his memory. Xenophon chose him as the hero of a treatise, and to the Persians he was always the father of the people. See L. Vivien de Saint Martin, *Mémoires sur l'éclipse de Thalès et sur l'époque de la prise de Sardes par Cyrus*, 1836, and P. Kieper, *Die neu entdeckten Inschriften über Cyrus*, 1882.

Cyrus the Younger (424-401 bc), second son of Parysatis and Darius, king of Persia. At sixteen he became satrap of Asia Minor. He attempted to assassinate his brother Artaxerxes II at the latter's coronation, but was pardoned on the intercession of his mother, Parysatis, and allowed to return to his satrapy in Asia Minor. Shortly afterwards he set out at the head of a large army, including 10,000 Greeks, to make another bid for the throne. He joined battle with his brother at Cunaxa, near Babylon, but was slain in the moment of victory. Artaxerxes allowed the 10,000 Greeks to return to

Greece via Armenia. Xenophon in his *Anabasis* speaks highly of C., of his prudence, generalship, and liberality, as well as of his enthusiasm for Gk philosophy.

Cysoing, Fr. tn in the dept of Nord, 9 m. from Lille. It has a 9th cent. abbey church, and the ruins of a Merovingian castle. There are textile manufs. and brewing. Pop. 3,200.

Cyst (Gk *kustis*, bladder), term used in various ways for bladderlike formations. In zoology it is applied to the protective covering formed by lower animals at such times as a period of drought or immediately before passing into the resting stage. The C. in which a young tapeworm usually becomes enveloped when in process of becoming a cystic or bladder-worm is formed from the connective tissue of the animal in which it is residing. In medicine, the term cyst is applied to any tumour (q.v.) containing fluid.

Cystids, an extinct class of stemless pelmatozoan echinoderms with a globular skeleton made up of numerous calcareous plates lacking symmetry. The plates are perforated by tiny pores, and the food grooves lie on the surface of the calyx. They lived from Ordovician to Permian times.

Cystopteris, genus of Alpine and Arctic ferns in the family Polypodiaceae. *C. fragilis*, the brittle or bladder fern, is common on rocks and walls in limestone dists. of Great Britain; *C. montana* is found on hills of Scotland. *C. bulbifera* has buds on the petioles which break off and give rise to new plants.

Cythera, anc. name of the is. of Cerigo (q.v.).

Cytinaceae, a family of dicotyledonous plants, estab. by Bentham and Hooker; it comprises the Rafflesiaceae together with the Hydnoraceae. All the species are leafless parasites without chlorophyll, and the flowers are either solitary or borne in a small, compact inflorescence. *Cytinus hypocistis* is a parasite found growing on the roots of certain kinds of cistus in S. France, and in Fr. pharmacy the condensed juice of the fruit is used as a styptic.

Cytisus, genus of hardy papilionaceous shrubs, natives almost exclusively of Europe and the temperate parts of Asia, bearing ternate leaves and almost always yellow flowers. *C. purpureus* is an exception to the yellow-flowered species, and has lilac-coloured flowers. *C.* (synonym *Sarothamnus*) *scoparius* is the broom-plant so well known and loved on our heaths for the brightness of its golden blossoms; the leaves of the plant are greatly reduced, and the fruit has an explosive mechanism. *C. battandieri*, a vigorous N. African silvery shrub, *C. demissus*, a prostrate dwarf, and the hybrids *C. × beaultii*, *C. × Porlock*, *C. × praecox*, the Warminster Broom, and *C. × versicolor*, are good garden plants. *C. canariensis*, Canary Is., is the 'Genista' of florists. The C. of Virgil was the *Medicago arborea* of botanists.

Cytology, branch of biology which deals with the structure and individual behaviour of cells (q.v.), the minute units

which make up the bodies of living organisms. The special relationship of cell structure to heredity is *cyto-genetics*. C. involves the most advanced techniques in microscopy (q.v.), in cutting fine sections of living or carefully preserved material (see *MICROTOME*), and their treatment with dyes, specially chosen because of their affinity for specific substances which typify cell components. In *cyto-chemistry*, the chemical nature of living material is investigated, thus bringing biology into contact with chemistry and bio-chemistry. For some account of the general findings of C. see *CELL*; see also *BIOLOGY*; *HISTOLOGY*. See L. Doncaster, *Cytology*, 1920; E. B. Wilson, *The Cell in Development and Heredity*, 1925; C. D. Darlington, *Recent Advances in Cytology*, 1932; L. W. Sharp, *Introduction to Cytology*, 1934; and R. A. R. Gresson, *Essentials of General Cytology*, 1948.

Cyturus, or **Cytorum**, tn on the coast of Paphlagonia. A commercial settlement of Sinope, it stood on a mt. of the same name, celebrated for its box-trees.

Cyzicenus, see **ANTIOCHUS**.

Cyzicus, anct name of a peninsula, about 9 m. in length, jutting out from the S. coast of the sea of Marmora, 70 m. SW. of Constantinople. Once an is., it was famous in anct times for the splendid city of C., described by Strabo, which was finally destroyed by the Arabs in 675. Originally C. was colonised from Miletus, in 756 BC. As late as 1444 there were still standing thirty-one columns of the magnificent temple built by Hadrian and M. Aurelius. The Turks call its mts (2500 ft.) Kappu-Dagh. Earthquakes have repeatedly devastated C., notably in the reign of Justinian, when marbles from the temple were used in the building of S. Sophia at Constantinople.

Czar, see **TSAR**.

Czarniecki, Stephen (1599-1665), Polish general. In 1654 Poland was invaded, and C. distinguished himself by strenuously defending Cracow, which he was compelled eventually to surrender to Gustavus Adolphus. He was victorious, however, in successive battles against the Russians and Swedes, notably at Kozeniec, and finally gained a decisive victory at Polonka, 1660. He was rewarded for these services, being placed in a position of high honour by the king, but d. very shortly afterwards while on a campaign against Russia. C. is sometimes known as the Polish du Guesclin.

Czartoryski, Adam Georg, Prince (1770-1861), Polish statesman and revolutionary, b. at Warsaw; spent part of his boyhood in England and studied at the univ. of Edinburgh. In 1793 he returned to Poland and enlisted under Kosciusko. Subsequently C. was sent to Russia as a hostage, where he gained the favour of the Grand Dukes Alexander and Paul, who later made him ambas. to Sardinia. In 1801, on the accession of Alexander, he became assistant to the minister of foreign affairs, and in this capacity in 1805 signed the treaty of alliance with Great Britain. In 1830, at the outbreak of

the Polish revolution, he joined the Poles and devoted himself to their cause. He was appointed president of the provisional gov. In Jan. 1831 the Diet, having declared the Polish throne vacant, made C. head of the national gov. He was excluded from the amnesty which was proclaimed on the Russian victory, and escaped to Paris, where he d.

Czechoslovak Architecture, see **GERMAN ARCHITECTURE**.

Czechoslovakia (Czech. *Československá Republika*), rep. of central Europe, bounded N. by Germany and Poland, E. by Russia, S. by Hungary and Austria, and W. by Germany. The Czechoslovak Rep., as recognised by the treaty of St Germain-en-Laye (q.v.) of 1919, consisted of the lands of Bohemia, Moravia, Slovakia, and Austrian Silesia (qq.v.); to these was added Subcarpathian Ruthenia (see **RUTHENIA**). The ters. of the state disintegrated during the period 1938-44 (see *History*, below), but the Czechoslovak state was again estab. after the Second World War. Subcarpathian Ruthenia, however, was ceded to the Soviet Union by the treaty of Moscow of 29 July 1945. The present area of C. is 49,381 sq. m.

Geography. The valley of the R. Morava divides the country into 2 main sections: in the W. are Bohemia and W. Moravia, and in the E. are E. Moravia and Slovakia. In the W. section, the basin of the Upper Elbe and the Vitava (qq.v.) slopes N. to the Erzgebirge and the Riesengebirge (qq.v.): in the SW. of this part of the country is the Forest of Bohemia (q.v.), and in the E. is the Moravian plateau. The E. section of the country contains the W. range of the Carpathians (q.v.), and slopes SW. from the High Tatras to the plain of the Danube (q.v.).

The climate of the country is, in general, of the continental type, with hot, dry summers and cold winters. There is much forest land, chiefly of mixed and coniferous forests, and in the low-lying dists. there are steppes. Wild life is plentiful, and the bear and wild boar are still found.

Constitution. The constitution was promulgated on 9 June 1948. The Czechoslovak state is declared to be a people's democratic republic, and is a unitary state of 2 Slav nations, the Czechs and the Slovaks, which have equal rights. There is a national assembly of 1 chamber (consisting of 300 members) in which is vested supreme legislative authority. Executive power resides in the gov., which is appointed and recalled by the president of the rep. In Slovakia there is a separate legislature, the Slovak National Council (consisting of 100 members): executive power is vested in the board of commissioners, which is appointed and recalled by the gov. of the rep.

Local Administration and Justice. By a decree of Dec. 1948 the old provs. were abolished, and were replaced by 19 *krajs*, or regions. They are: Prague, České Budějovice, Plzeň, Karlovy Vary,

Ústí nad Labem, Liberec, Hradec Králové, Pardubice, Jihlava, Brno, Olomouc, Gottwaldov, Ostrava, Bratislava, Nitra, Banská Bystrica, Žilina, Košice, Prešov (q.v.).

A new code of criminal law came into force in Aug. 1950; it is similar to the Russian code. Serious crimes against the state are dealt with by the state courts; lesser crimes, whether against the state or against individuals, are dealt with by committees, of which there is one for each community of more than 500 inhab.

Population, Religion, Education, Chief Towns. The pop. in 1955 was 13,157,000, of which some 70 per cent was Rom. Catholic. It is estimated that there are over 1,000,000 Protestants, and there are about 950,000 members of the Czechoslovak Church and 50,000 Jews. The administration of all churches is under state control, and the salaries of practising clergymen are paid by the state. The education act of April 1948 provides for a uniform state system of education. There are about 12,400 elementary and secondary schools, and there are over 100 institutions of higher education. Univs. are situated at Prague, Brno, Olomouc, and Bratislava. The prin. tns are Prague, Brno, Ostrava, Bratislava, Plzeň, Olomouc, Košice, Ústí nad Labem, Liberec, and Hradec Králové.

Agriculture. Agriculture is highly developed. Over 40 per cent of the total land area is arable land, and over 15 per cent is grass and pasture. By the end of 1955, 42 per cent of all farm land had been collectivised, and there were over 6600 collective farms. The chief crops are wheat, rye, barley, oats, maize, potatoes, and sugar beet. Hops, tobacco, and fruit are also valuable products, and there are rich forests. Cattle, pigs, sheep, goats, horses, and poultry are raised.

Industry and Commerce. C. is essentially an industrial country with extensive mineral deposits: soft and hard coal, iron, graphite, copper, lead, silver, garnets, and uranium, as well as other minerals, are found. The nationalisation of industry is decreed in the constitution. There are important manufs. of textiles, chemicals, porcelain, cement, steel products, glass, leather, paper, and beer (Plzeň). Much hydro-electric power is generated. There is a state monopoly of foreign trade. The prin. countries from which C. imports are the Soviet Union, Great Britain, Yugoslavia, the Netherlands, Poland, and Sweden; and exports go mainly to the Soviet Union, Poland, Yugoslavia, the Netherlands, Great Britain, and Germany.

Communications. There are excellent roads and railways, and riv. communications are well developed. Air transport is operated by the Czechoslovakian airline, C.S.A. The prin. airports are at Prague, Brno, Bratislava, Olomouc, and Košice.

Defence. There are 3 army regions, with H.Q. at Prague, Brno, and Bratislava. Military training is on Russian lines. Service lasts for 2 years, after which the soldier remains on the reserve until the age of 50. The strength of the army in 1956 was estimated as

175,000 men. Together with air and security forces, the total was estimated as about 300,000 men.

Currency. The unit of currency is the *koruna* (Kčs), or crown, of 100 *haler*.

History (1914-39). The early history of C. is that of Bohemia (q.v., see also CZECHOS.), and the memory of that former political unity, the kingdom of Bohemia, was the urge to such men as Masaryk, Beneš, Kramář, and Štefánik to found a similar political unity on the lines of a modern republic. At the outbreak of the First World War the Czechoslovaks (this joint name had been in current use since about 1880) found themselves pressed into the service of Austria, while their sympathies were with the Allies, their political ideals being opposed to a pan-Ger. domination of Central Europe. Many Czech detachments in the Austrian Army went over to the side of the Serbs, and the exploits of the Czechoslovak Army in Siberia commanded the admiration of Europe. It was Thomas Masaryk (q.v.) who began the formation of Czechoslovak legions which served voluntarily with the Allied armies, and this together with Masaryk's own writings and speeches convinced England, France, Italy, and America of the reality of the Czech claims to national independence. A Czech National Council was formed in Paris, and at the peace conference this was recognised as the responsible gov. of a belligerent nation with a right to be represented. The union of the 2 Slav races had for long been an ideal, and after the collapse of the Hapsburg monarchy it became an accomplished fact. An all-constituent assembly, held in Prague in Jan. 1918 was followed in April by a congress of oppressed nationalities which met in Rome. In Oct. a bloodless revolution placed the administration of Prague in the hands of the National Council, and an assembly, convened on 14 Nov. in Prague, elected Masaryk as president of the new rep., Karel Kramář (1860-1937) as premier, and Edouard Beneš (q.v.) as foreign minister. A provisional constitution was drawn up, and the National Assembly, formed after a general election on 29 Feb. 1920, passed this constitution and formally ratified President Masaryk's election for a period of 7 years. In 1927 he was re-elected. During the period 1918-38 C. made considerable social, industrial, and cultural progress. Beneš represented C. at the peace conference and pleaded successfully for the recognition of C. as a national unity. The Slovaks, the former victims of Magyar domination, had free and equal rights with the Czechs under the new constitution. The most backward of the races formerly governed by Hungary were the Ruthenians, inhabiting sub-Carpathian Ruthenia, a part of Little Russia. In 1918 they petitioned for an autonomous union with C., and this was ratified at the peace conference. A 'Little Entente' was formed and renewed in 1929 between C., Yugoslavia, and Rumania to resist possible Magyar or Bolshevik aggression and to promote

trade on the Danube. An agreement with respect to common interest was made in 1924 between France and C. The Ger. and Magyar minorities in C. enjoyed equal citizenship with the Czechoslovaks.

The German Invasion and Annexation of 1939. By 1937 the problem of the Sudeten-Ger. minorities in N. C. was causing friction and anxiety. These minorities were mainly descendants of Ger. colonists invited by the last rulers of the Premised dynasty in the Middle Ages. They numbered 3,232,000, or one-fifth of the whole pop. of C., and held 40 per cent of the country's industries. They were generally hostile to their inclusion in the new state of C. formed after the First World War by the treaty of Versailles, and their deputies consistently pursued a policy of separatism and obstruction, with the exception of the Ger. Clerical party, which joined the gov. bloc. In 1936 the Nazi-controlled Henlein became the Sudeten Gers.' political leader. Beneš, who was then president of C., admitted that the Sudeten Germans had grievances—an admission which was later to receive some support from Lord Runciman in a Brit. Gov. White Paper—but he refused to entertain the idea of giving them national autonomy within the state of C. In 1938 the outlook for C. grew ominous by reason of the Ger. absorption of Austria, which left the Czechoslovak rep. surrounded on 3 sides by Ger. ter. It was fairly obvious that the next Nazi step towards the consolidation of the Ger. race would be attempted against C. During the summer of 1938 the Nazi party in the Sudeten Ger. lands, vigorously supported by their kinsmen, pressed ever more aggressively for an increasing series of privileges, which in the end became incompatible with the sovereignty of the rep. This time there was a brief respite, during which the Czech Gov. invited a Brit. statesman to study the question at issue on the spot and endeavour to mediate. Lord Runciman, however, found himself thwarted by rising passions on both sides, the Sudeten Germans accepting one concession only to demand another, the Czechs protesting that their national existence was threatened and invoking the treaty binding France to their support. Behind the Sudeten Germans now loomed the might of Germany. Hitler had roused his followers to frenzy by a furious oration at a Nazi rally at Nuremberg. The League of Nations was powerless, for its authority was acknowledged only by one side to the dispute. It was a supreme test of the Brit. prime minister's policy of appeasement. Meanwhile Lord Runciman reported that the claim of the Sudeten Germans was substantially justified. The problem ought, therefore, to have been referred to the orthodox machinery of boundary negotiation through diplomatic channels. But Hitler claimed the right to erect by force of arms a frontier the Czechs contended to be ethnographically unjustified and one that must leave their country defenceless. It was at this stage that Chamberlain, the Brit. prime minister,

travelling by air, sought a direct interview with Hitler in his home at Berchtesgaden. Having thus induced Hitler to negotiate he consulted his own cabinet and made a further flight to Germany in order to secure the acceptance of a plan agreed upon by Great Britain and France. This plan called upon C. to make heavy sacrifices in the cause of peace and was only accepted by the Czech Gov. under severe pressure. At the eleventh hour, within 3 days of the date when he had announced his intention to invade C., Hitler accepted the negotiated settlement. Many averred that the cause of C. had been betrayed by a pusillanimous trucking to the dictators, through the Munich agreement of 30 Sept. concluded at a conference between the Brit. and Fr. premiers and Hitler and



LACE-MAKING IN CZECHOSLOVAKIA

Mussolini (*see* MUNICH PACT). President Beneš resigned and the truncated rep. of C. set about the task of adapting policy and institutions to harmonise with the desires of the Reich. In March 1939 Hitler, in flat defiance of his Munich pledges, proclaimed the annexation of the remainder of C., accompanying his proclamation with such a display of military force as made resistance impossible.

History of Czechoslovakia during the Second World War and after. Following the Ger. occupation (15 March), to which the army and people, on instructions from President Hacha's pro-Ger. gov., offered no resistance, Hitler issued a proclamation declaring Bohemia and Moravia a protectorate of the Reich, von Neurath (q.v.) being appointed protector. The Czechoslovak National Bank, together with its gold reserve of 2,500,000,000 crowns, was taken over by Ger. bank

officials; the Czech Army was disbanded and all political parties were merged in a single party led by the puppet president. Slovakia, which, under Father Tiso, had acquired autonomous gov., was allowed to retain her nominal independence and military forces; but in fact her autonomy was useless, for the Germans, later in the year, in preparation for the invasion of Poland, sent large bodies of troops into the country and declared martial law. On the secession of Slovakia, Carpatho-Ukraine, the third component of the Czechoslovak state, also declared its independence, but the existence of this new state was short-lived, Hungarian troops having marched into the ter. even before the Germans occupied Moravska-Ostrava by way of forestalling Polish action in that very important strategic position. The process of Germanising Bohemia-Moravia was carried on relentlessly by von Neurath and his coadjutor, the Sudeten Ger. Frank, assisted by the Gestapo. Hacha was left with the title of president, but wielded no power, and despite his pro-Ger. efforts the people remained bitterly hostile to the Germans. Systematic sabotage led to arrests and deportations of Czechs to concentration camps, where they often suffered death and torture. A cruel blow to the Czech spirit was struck by the closing of the Czech Univ. The economic subjection of the country was completed by the setting up of a customs and monetary union with the Reich, under which all diplomatic trade agreements were to be concluded by Germany, and the National Bank in Prague ceased all international dealings. Abroad the Czech provisional gov., with H.Q. in London, directed the efforts of some 2,000,000 Czechoslovak citizens abroad in co-operation with Great Britain and the Brit. Empire in all spheres. The Czech Army and Czech pilots both rendered useful service to the Allies from 1940, both in Great Britain and the Middle E. But Slovakia, under the puppet president Tiso, continued to co-operate with Germany, and late in the year became a junior member of the Axis (q.v.).

Following the Ger. declaration of war against Russia, the armament industries and transport facilities of C. acquired an added importance for the Germans. There now occurred, through sabotage by Czech patriots, an unusual number of serious railway accidents, explosions in armament factories, and similar incidents. Production at the Skoda works fell by two-fifths. Von Neurath was succeeded by the notorious Gestapo chief Heydrich (q.v.), who promptly initiated a reign of terror in C. Slovakia's adherence to the Axis brought her no benefits; but in Oct. 1941 Tiso visited Hitler to receive an assurance that Slovakia, on condition of putting her forces at Germany's disposal, would not be asked to yield any more ter. to Hungary. In the succeeding period a number of pro-Nazis were introduced into the re-formed Czech cabinet, with a view to speeding up the Nazification of Bohemia-Moravia. In May 1942 Heydrich announced that the

entire youth of the country was to be conscripted. Next day a bomb was thrown at his car, and he was fatally wounded. The outcome was a new reign of terror, the brutality of the Germans culminating on 10 June in the stark horror of the destruction of the vil. of Lidice (q.v.), with the shooting of all the men and the sending of all the women to concentration camps. Executions continued until the end of the year.

On 5 Aug. 1941 the Brit. Gov., in order to obviate misunderstanding, pub. a White Paper confirming the undertaking given to Dr Beneš (11 Nov. 1940) that in the post-war settlement Britain would not be bound by any arrangements made at Munich in 1938 regarding the frontiers of C. Shortly before this the Czech legation in London was raised to the rank of an embassy, and the Brit. minister to the Czech Gov. (in London) also became an ambas. Despite persecution the underground movement in the country intensified its activities, and notwithstanding the efforts of the puppet premier, Krejci, the people were as bitterly anti-German as ever. Early in 1943 the mobilisation for war work of all men up to 65 and women up to 45, proclaimed in Germany, was extended to Bohemia-Moravia, with the object of obtaining 500,000 persons for slave labour in Germany; but transport difficulties, aggravated by Allied raids, made it impossible for the Germans to move more than a portion of the 550,000 persons registered.

The corruption and unscrupulousness of the pro-Nazi gov. of Slovakia were now beginning to reap their harvest by driving ever greater numbers of Slovaks into the underground resistance movement. In May-June 1943 Beneš, president (in London) of the Czech rep., visited the U.S.A. and Canada, thereby demonstrating both to the Czech people and to the Germans and Hungarians that the Czech Gov. of London enjoyed the full confidence and support of the U.S.A., a fact which was confirmed by the raising of the Czechoslovak legation in Washington to the status of an embassy. Beneš addressed a joint session of both Houses of Congress and, in Ottawa, he addressed members of both Houses of the Canadian parliament. Later in the same year he went to Moscow to witness the signing of a treaty of friendship, collaboration, and mutual assistance between C. and Soviet Russia, the culmination of negotiations which had been in progress for many months. Czechoslovak infantry and artillery formations, which had participated in the Syrian and Libyan campaigns of 1940-2, were transferred to Great Britain, and merged with the Czechoslovak independent brigade into an armoured brigade. The first Czechoslovak independent brigade in Russia fought before Kharkov (March 1943), and won sev. decorations. A second Czechoslovak brigade was formed by Czechs, Slovaks, and sub-Carpathian Ruthenians, who had succeeded in deserting from Axis fighting formations or labour detachments.

The Czechoslovak armoured brigade in Great Britain left for the Continent in Aug. 1944, and took part in the siege of Dunkirk, while Czech fighter and bomber squadrons of the R.A.F. were among the air forces covering the landings in Normandy. There was formed in Russia a Czech air force regiment of parachutists which took part in the subsequent Slovak rising against the Axis forces. This rising was well prepared in co-operation with the gov. of Beneš during the latter's visit to Moscow. The Slovak Army was instructed to rise, and the civil authorities to restore the Czechoslovak republic on Slovak soil as soon as the Russian armies reached the Carpathian passes leading into E. Slovakia; and in preparation for the rising great quantities of munitions were stored in the mts of central Slovakia. In Bratislava there was fighting between guerrillas and parachutists on the one hand and Ger. S.S. battalions on the other. The Ger. high command thereupon told the Slovak Gov. that they were about to occupy Slovakia by their military forces 'as provided in the Ger.-Slovak treaty of March 1939.' The Slovak National Council promptly countered this announcement by calling on the country to resist and proclaiming the puppet Slovak state to be abolished and the Czechoslovak rep. restored on Slovak ter. Some regular troops and guerrillas succeeded in hampering the occupation of Slovakia by the Ger. Army, thereby leaving a flank in Germany open to Allied attack from Poland and Rumania. In the central region, where most of the fighting took place, the Ger. Army and Gestapo burnt down vils. and slaughtered the people. It is estimated in Bratislava that the loss of life during and after the rising—which was premature in view of the fact that the Russian Army was nowhere near the NE. Slovak border—was some 25,000–30,000. Hence the Czech forces withdrew from the area of Banská-Bystřica into prepared positions in the mts, where organised resistance was carried on pending the arrival of the Russians from Hungary.

During 1944 Allied aircraft launched a dozen heavy raids on C., which caused damage to the Skoda works and the great synthetic oil plants at Most, and in the Bruo-Adamov dist., where a great armament combine was attacked. After the Allies had landed in Europe unrest increased in C., whereupon Frank threatened the people that Germany might change the legal position of Bohemia-Moravia by incorporating both ters. in the Reich, and steps in this direction were gradually taken. Following the conspiracy of the Ger. generals against Hitler's life total mobilisation of man power was ordered in the 'protectorate' of Bohemia-Moravia, and by the middle of 1944 some 500,000 Czechs were working outside their own country. Under the Ger. occupation the internal indebtedness of the protectorate had increased to more than 60 billion crowns, while the note circulation reached 24 billion crowns as against 7 billion in the whole of C. before the war.

Carpathian Ukraine (sub-Carpathian Ruthenia) was the first of the provs. of C. to be freed by Soviet and Czechoslovak troops. Early in Oct., following the collapse of Rumania, Russian forces were able to press their attack against the Ger.-Hungarian armies from a S. and SE. direction and overrun all the Hungarian lines of defence. Prague was the last European cap. to be liberated. At the end of 1944 Koniev's armies entered C. from Hungary and Poland, but some months elapsed before they reached the cap. After being joined by the Czech Army Corps of Gen. Svoboda, the combined Allied forces liberated Košice and Prešov (20 Jan. 1945) and Poprad (17 Jan.) beneath the Tatras Mts. But then Ger. resistance stiffened and it was not till the middle of March that Banská-Bystřica and Zvolen, in the Lower Tatras Mts, fell to the Allies. On 4 April Bratislava, cap. of Slovakia, was occupied by Russian troops, who had fought their way along the Danube from Hungary. The capture of Hodanin in S. Moravia followed. A week later Gen. Patton's Amer. troops of the 50th Div. marched into C. at a point NW. of Asch, and simultaneously the Czech Gov., now back on Czech soil, appealed to the populace to rise against the Gers.—an appeal which met with swift response. There ensued savage fighting in NW. Slovakia and S. Moravia. On 5 May the people of the cap. rose against the Ger. occupying troops and a fierce battle lasting 4 days took place between poorly armed Czech patriots and the Germans, in which 2000 Czechs and nearly 100 Germans were killed. Amer. troops who entered Plzeň on 6 May were only 50 m. from Prague on 7 May, when they refrained from marching further in accordance with the Yalta agreement (q.v.), which delimited the zones of occupation between the Allies. This standstill on the part of the W. Allies has subsequently been much criticised. In the result it put C. behind the 'iron curtain.' On 7 May the Ger. garrison of Prague surrendered to the Czechoslovak National Council which had organised the rising, and the last remnants of Ger. resistance were wiped out by Russian troops who entered the city on 9 May, the day following the final capitulation of the Ger. forces in Germany. Ters. taken by Germans, Poles, and Hungarians were restored to Czechoslovak sovereignty between Nov. 1944 and June 1945. Sovereignty over sub-Carpathian Ruthenia was transferred to the Soviet Union by the treaty of Moscow, 29 July 1945. Beneš and his associates reached Slovakia in April, where they set up a provisional gov. of the National Front of 16 Czechs and 6 Slovaks pending the meeting of the constituent national assembly which was to consist of a single House of 300 members. The nationalisation of the means of production in industry, of agriculture and commerce, and of banking and insurance became the chief item in the gov.'s programme. Another fundamental change in the structure of the Czechoslovak rep. which took

place in 1945 was its change from a multi-national into a Slavonic national state. Ger. and Hungarian minorities were transferred variously to Germany and Hungary and later to the Amer.-occupied zone of Germany. The Czechoslovak Gov. at length agreed to retain in C. the rest of the Ger. pop., without, however, restoring the minorities statute of the peace treaties of 1919-20. The ensuing purge resulted in retribution for the chief quislings. Thus Hacha *d.* in imprisonment, while the chief collaborator with the Germans, Col. Emanuel Moravec, committed suicide. Sudeten Ger. Nazis who had helped organise the Ger. reign of terror were handed over to the Czech authorities by the Amer. Army in the occupation zone. Heiden took his own life on being arrested by the Amers. Tiso was brought to trial in Bratislava and condemned. Von Neurath was one of the accused at the Nuremberg trial, charged with responsibility for the murder of Czech students in Prague in Nov. 1939 and for war crimes committed under his authority.

The first post-war election in C. took place in 1946. As in most of the liberated countries, the election was really a trial of strength between the E. and W. concepts of democracy. Russian influence in C. was by now considerable and the comparative strength of the Right-wing parties in the election surprised many observers. In the result the Left-wing parties obtained 152 seats (Communists, 114) and the Right 148. It remained to be seen whether the Communists, commanding a minority of votes and seats, could now consider themselves strong enough to change the constitution adopted after the First World War, when W. influence, and in particular the influence of the Amer. constitution on President Masaryk, was predominant; whereas the Communists stood for the leadership as developed in Russia, for a single-chamber legislature, for making the judiciary an instrument of politics, and for subjecting the individual to strong party discipline. The issue was not left long in doubt.

In Feb. 1948 the Communists, with Soviet backing, secured control of the gov. The new ministry was again headed by Gottwald, a Communist who had been premier in the previous coalition gov.; but this time his colleagues were all either Communists or Communist sympathisers with the exception of Jan Masaryk, the foreign minister. The acceptance of this ministry, which was forced on Dr Beneš, the president of C., was accompanied by a ruthless purge of the civil service and the suppression of sev. newspapers. The papers still favourable to the previous regime of Czech Socialist, People's, and Slovak Democratic parties could not therefore publish the text of the 3-power statement by the Brit., Amer., and Fr. Govs. condemning these events as the 'establishment of a disguised dictatorship of a single party under the cloak of a Government of National Union' and, in fact, the Czech Communist Gov. banned pub. of the

statement, Gottwald declaring that his cabinet would not accept lessons on democracy from those who were responsible for Munich. Jan Masaryk (q.v.), son of C.'s first president, minister of foreign affairs, subsequently committed suicide, and Beneš, although he did not give up his office as president immediately, virtually retired from public affairs. He resigned on 7 June, being succeeded by the prime minister, Gottwald, and *d.* on 2 Aug. His surrender to the Communist demands had undoubtedly as its sole motive the preservation of the Czech people, for otherwise civil war would almost certainly have ensued.

In May 1948 Russia vetoed a U.N. move to inquire into the Communist *coup* in C. The same year a new constitution declared C. a people's democratic rep.; shortly afterwards local gov. was also reorganised, and in 1950 Czech justice was remodelled on the Soviet pattern. The Catholic Church was subject to continual gov. attacks, and the archbishop of Prague prevented from carrying out his episcopal duties, and kept under circumstances amounting to arrest. The new regime met initially with much hostility and a good deal of active opposition, some of it inspired by Slovak separatism. 1950-1 was a period of Communist party purges in C., and in Nov. 1952 Slansky, former secretary-general of the Czech Communist party, and Clementis, a former Communist foreign minister, were among those tried and executed on charges of treason.

Gottwald, who had been president of C. since June 1948, *d.* suddenly in Mar. 1953. He was succeeded by Antonín Zápotocký (*b.* 1884), a veteran Communist. During the early summer of 1953 the gov. admitted that there was industrial unrest in C. (probably touched off by the hardships caused by a currency reform in May 1953), and strict legislation was enacted to combat absenteeism in the factories. This was repealed shortly afterwards, and Communist pressure eased a little in C., as in the other Communist countries at this time (Stalin had *d.* in Feb. 1953).

The unrest in Poland and Hungary in 1956 did not seem to have any sizable counterpart in C., where the Zápotocký regime was in 1957 apparently firmly in control, and governing on orthodox Communist lines. Some W. observers have, however, detected some liberalisation, for example in the cultural field, since the beginning of 1957.

Language and Literature. Two closely related languages are spoken in C., Czech in Bohemia and Moravia and Slovak in Slovakia. (Hungarian and Ukrainian are also spoken in some dists. of Slovakia.) Originally there was only 1 language—Czech, divided into sev. dialects. In the 14th cent. a W. Czech dialect was chosen for the literary language, and in the course of many centuries of political separation (Slovakia was part of Hungary until 1918) a demand grew up for a separate Slovak literary language. This eventually came into being more or less in its present form in the middle of the 19th cent.

Czech and Slovak belong to the W. group of Slavonic languages, whose gen. characteristics they share. The noun has 7 cases (the vocative is in everyday use), and the verb has the typically Slavonic 'aspects' and a number of participles. Czech and Slovak use the Lat. alphabet, varied by diacritical marks. Among their distinguishing features is a system of long and short vowels independent of stress, which always falls on the first syllable (e.g. the name of the composer Dvořák, which is stressed on the short 'o' but has a long vowel, unstressed, in the 2nd syllable). Both l and r can be vowels as well as consonants, and Czech only has the distinctive letter ř, pronounced approximately 'rsh.' Owing mainly to certain characteristic vowel changes, spoken Czech is the most diffi-

written in Czech instead of in Lat. In the reign of his son, the emperor Václav (Wenceslaus). To this period belong the *Book of the Old Lord of Rosenberg*, one of the very early specimens of Bohemian prose, and the *Exposition of the Law*, by Andrew of Duba. Smil Flaška of Pardubice wrote clever satires. The pre-eminent author of the 14th cent. is Thomas of Štítně (1333-1400), who wrote in excellent prose upon religious and moral questions. Among other authors may be mentioned Vavřinec z Brezowa, who wrote a hist. of the Rom. emperors and trans. *Mandeville's Travels*. By the end of this period also the complete trans. of the Bible into Czech had been made. The prevalence of religious disputes caused the Bible to be more widely read and better understood. Hus did much to settle



BOHEMIA: MARIÁNSKÉ LÁZNĚ (MARIENBAD)

cult language for other Slavs to understand, whereas Slovak, in which these changes do not occur, is much easier. Both languages are said to be very well suited to singing, thanks to the purity of their vowels.

Czech literature may be divided into 3 main periods: the 1st extends from the beginning up to the time of Hus, that is to 1409; the 2nd period extends from the time of Hus to about 1774; and from then till the present time forms the 3rd period. The *Chronicle*, in verse, which is generally called after Dalimil, belongs to the 14th cent. The Czechs possess some remains of a collection of national songs, which probably date from 1290. The univ. of Prague was founded in 1348 by Charles IV, who was strongly in favour of the cultivation of the Czech language, and commanded it to be learnt by the sons of the Ger. electors. All decrees were

Bohemian orthography, and his voluminous writings had great influence. Many of his works were in Lat., but a number in Czech. The church service was now read in Czech, the Bible was re-trans., and a great number of religious and controversial works were written. One of the most influential figures of the time is Peter Chelčický, who d. in 1460. He has been styled the Czech Tolstoy, and his writings had much influence in the formation of the Czech Brethren. His chief work is *The Net of Faith*. The first regular printing press was set up at Prague in the year 1487, and the years 1500-1620 may be said to constitute the golden age of Bohemian literature. In Bohemia at this time the cultivation of learning was open to the whole people; all branches of science received attention, and were brought to a very high degree of knowledge for the time. The writers

of the period are too numerous to receive detailed mention, but the names of Václav Hájek z Veleslavín, 1546-99; Liborčan, d. 1553; Bartoš, d. 1539; Sixt of Ottersdorf, 1500-83; Václav, and Vratislav may be mentioned. But in 1620 the battle of the White Mt rendered fruitless the Czechs' efforts to preserve their language. The Czech nation submitted to the conqueror; scarcely any literature was produced in the country, and the decline was such that by the 18th cent. Czech as a written language might be said to be almost extinct. John Amos Comenius, or Komenský, wrote over 50 works, dealing mostly with educational subjects, including the first illustrated book for children. But they were written from exile, Comenius dying in Holland at the age of 78, in the year 1670. Like Comenius, Wenceslas Hollar also escaped to England after the Thirty Years War. His etchings show London before the Great Fire. At the counter-reformation (q.v.) the Hussite literature was exterminated. Very much later, however, in the third period of Czech literature, a revival took place. At that time a deputation of secret Czech Protestants induced the emperor Joseph II to grant religious toleration. This made possible a revival of interest in Czech history and language, a prerequisite of the later literary revival.

The first generation of awakeners (*buditelé* as Czech historians call them) were mainly scholars, not having any special political aim. The most important of these was Josef Dobrovský (1757-1829), founder of the study of Slavonic philology. The Czech language was their special interest, for before any Czech literary revival was possible it was necessary to revive and purify the language, which gradually became debased after the defeat of 1620. A little later Jungmann (1773-1847), also a philologist, and his circle had more frankly political and patriotic aims. Jungmann's most important works were a monumental Czech-Ger. dictionary and his trans. of foreign classics. Typical of the Romantic patriotism of these times was the 'finding' of 2 early Czech manuscripts, later proved to be forged, but about which controversy raged for many years. To this period belong also Jan Kollár, author of *Slovky dcera*, 1824 onwards, a cycle of sonnets on Slavonic solidarity; the historian Palacký; and the ethnographer Safárik. F. L. Čelakovský (q.v.) stands on the borderline between the early Romanticism and the more mature Romanticism of the 30's and 40's. In this latter period the most important figures are K. J. Erben, poet and collector of folklore, and K. H. Mácha, author of *Máj*, the greatest romantic poem in the Czech language, showing Byronic influences (Eng. trans. *May*, pub. 1949). The last important writers who can be called romantic, though they both have as well as a subjective outlook some social and political consciousness, are Božena Němcová (q.v.), writer of country tales and collector of folklore, and J. K. Tyl, whose histori-

cal dramas evoke little of the spirit of the times with which they are concerned, but rather act as a vehicle for the author's patriotic and social ideals. The death-blow to Romanticism was finally dealt by Karel Havlíček (q.v.), who scathingly criticised the sentimental outlook of Tyl and Němcová. The 1860's and 70's are dominated by the 2 contrasting figures of Hálek and Neruda (q.v.). Hálek wrote comfortable, not very profound, middle-class poetry about love and nature, while Neruda's poetry is ironical and analytic. Also to the 60's and 70's belong the countryman poet Heyduček and the best novels of Karolína Světlá, a regional novelist whose plots are mostly concerned with love and marriage and depict the renunciation of selfish passions for some general or particular good. In the rest of the 19th cent. the most important poets are Čech (q.v.), Vrchlický (whose prolific output, including many trans., made some critics call him the Czech Victor Hugo), E. Krásnohorská, and Julius Seyer, reviver of medieval legends. Alois Jirásek (1851-1930) began to write his popular historical novels, and the end of the century saw the beginning of the modern social novel (Rais, Baar, and others) and the critical realism of Masaryk (q.v.), later the first president of C. As in the rest of Europe there was also a group of symbolist poets, who flourished approximately 1890-1914. These include J. Kvapil, Karel, Toman, Otakar Theer, A. Sova, and O. Bězina (q.v., under his real name of Jebavý). Political independence after 1918 gave a great impetus to all forms of literature, which was greater in quantity than ever before. The best-known modern prose-writer is Karel Čapek (q.v.). Many novelists, both of the inter-war years and since 1945, have had left-wing revolutionary views, and their novels deal with social and political problems. The most prominent modern novelists are Ivan Olbracht, Jan Drda, Vladislav Vančura, Anna Maria Tlischová, Marie Majerová, Marie Pujmannová, and Jarmila Glazarová. Rather apart from these stands the humorist Jaroslav Hašek, who is internationally known for his *Adventures of the Good Soldier Schweik*. The best-known poets since 1918 are Jiří Wolker (1900-24), Vítězslav Nezval, S. K. Neumann, J. Seifert, J. Hora, F. Hulaš, and F. Šrámek.

Slovak literature is virtually a creation of the 19th cent., following on the formation of a Slovak literary language. The most important figure in this struggle for a new language was L'udovít Stúr (1815-1856). Stúr gathered round him a circle of poets who fl. about the 1860's. The most important were Ján Chalúpk, Ján Botto, Josef Sladkovič, and Janko Kráľ. After the 1860's Slovak literature suffered a setback, largely owing to political pressure on the Slovaks by the Hungarians to become magyarised, but later on there was a revival, in which the most prominent figures were S. Hurban-Vajanský (1847-1916) and Pavel Országh (1849-1921), who wrote under the pseudonym of

Hviezdoslav and is the greatest Slovak poet. Since 1918 literary output has been much greater than ever before. Among the modern poets may be mentioned Ivan Krasko, Ján Jesenský, and Lačo Novomeský. Prose-writers include I. Nádaši-Jóga, author of the historical novel *Adam Šangala*, Peter Jilemnický, and Janko Alexy.

Architecture. See GERMAN ARCHITECTURE.

Art. Czech art was estab. by the 14th cent., with the illumination of MSS. It was encouraged from the time of Rudolf II but interrupted by the Thirty Years War. Noted painters prior to the 19th-cent. revival are Brandl, Reiner, and Škréta. Joseph Mánes (1820-70) was C.'s first famous creative artist, in landscape portraiture and natural studies. An artist well known for his historical paintings is V. Brožík (1849-1913), who exhibited in Paris. Uprka, the Slovak painter, depicted typical Slovak scenes and life in a

Smetana was the creator of national Czech composition, simple folk tunes being a source of most of his inspiration. He is the composer of many tragic and comic operas, while his cycle of six symphonic poems, *My Country*, are an apotheosis of the historical past of the Czechs. The success of Dvořák, also a creator of modern Czech music, was unusual for a Czech composer. His operas are not so well known as his other compositions, particularly his symphonies and much of his chamber music. Besides these two great classical composers, C. has numerous others, some quite well known outside their own country; Suk, son-in-law of Dvořák, composer of orchestral works and chamber music; Novák, who specialised in symphonic poems such as *Slovak Suite* and *In the Tatras*; Janáček (q.v.) a great modern opera composer; Fibich, creator of modern Czech melodrama; Foerster, writer of symphonies and



PRAGUE, FROM THE VLTAVA

colourful impressionist style. An important modern Czech artist is Max Švabinský, a follower of the Mánes school, which did much to foster art in C. He is also a pioneer in Czech graphic art. Modernism in art has been represented by O. Kubín (Coubine) (b. 1883), Josef Čapek, brother of the writer (b. 1887; d. in Belsen camp, 1945), Bohumil Kubišta (1884-1918), František Muzika (b. 1900), and Antonín Procházka (1882-1945). In sculpture the most noted figure is J. V. Myslbek (1848-1922), whose subjects are mostly founded on Czech hist. Other sculptors are Jan Štursa (1880-1925), whose 'Wounded Man' and a figure of T. G. Masaryk are among his best-known works; Otto Gutfreund (1889-1927); and Emil Filla (b. 1882).

The art of which the nation may be most proud is music. On the foundation of a rich folk-music a national opera was created by Bedřich Smetana (q.v.) (1824-1884), while Antonín Dvořák (1841-1904) remains a composer of the front rank.

operas; Martinů, a living composer who shows western influences; and Weinberger, composer of the opera *Švanda the Bagpiper*.

See F. Chudoba, *A Short Survey of Czech Literature*, 1924; A. Matejcek and Z. Wirth, *Modern and Contemporary Czech Art*, 1924; K. Čapek, *The Origins of the Czechoslovak State*, 1926; T. G. Masaryk, *The Making of a State*, 1927; P. Selver, *Anthology of Czechoslovak Literature*, 1929; R. W. Seton-Watson, *A History of the Czechs and Slovaks*, 1943; S. H. Thomson, *Czechoslovakia in European History*, 1944; H. Ripka, *Le Coup de Prague: une révolution préfabriquée*, 1949; Sir R. B. Lockhart, *Jan Masaryk*, 1951; G. Bolton, *Czech Tragedy*, 1955.

Czechs, Slavic (see SLAVS) people mostly inhabiting the W. regions of Czechoslovakia, where they number some 8,000,000. Once they dwelt along the banks of the upper Vistula (q.v.), but about AD 475 they settled in the country now called Bohemia (q.v.), and

as early as the 9th cent. their name was applied to the entire Slav pop. of Bohemia. In the 19th cent., after cents. of Germanic influence in Bohemia, there were determined efforts to preserve the Czech language and culture. This movement was fostered by the work of Josef Dobrowsky (q.v.), and by the formation of a Czech univ. in Prague in 1882 (*see* MASARYK, THOMAS). C. are found also in Russia and the U.S.A., where there are newspapers in their language. *See also* BOHEMIA; CZECHOSLOVAKIA; and INDO-EUROPEAN LANGUAGES.

Czegled, *see* CEGLED.

Czermak, Jaroslav (1831-78), Bohemian artist, *b.* Prague. He studied art in Antwerp, Brussels, and Paris, and his first pictures dealt with incidents in the hist. of Bohemia, his own country; among these pictures being 'Rudolph II's Begging Court-Poets.' Travel led him to paint such subjects as 'A Montenegrin Woman and Child' and 'The Turks seizing a Herzegovinian Woman.'

Czermak, Johann Nepomuk (1828-73), Czech physiologist, *b.* Prague. Appointed prof. of physiology in Budapest (1858), in Jena (1865), and in Leipzig (1869). At his own expense he built a laboratory and auditorium adapted for demonstrations in experimental physiology. He made improvements in the laryngoscope, and did pioneer work in rhinoscopy.

Czernowitz, *see* CHERNOVITSY.

Czerny, Karl (1791-1857). Austrian pianist and composer, *b.* Vienna, son of a pianoforte teacher, who trained him for that instrument to such good purpose that he began his own career as a teacher at fourteen. He came under the notice of Beethoven, whose pupil he became, and his greatest claim to distinction as a pianist is that he was chosen to be the

first to play Beethoven's E flat major concerto in public. He soon became the most popular teacher of the piano in Vienna, where there were numerous competitors. His pupils included Liszt and many others who became famous. He wrote hundreds of popular pianoforte studies, and his works, which included most kinds of composition, numbered 1000 at the time of his death; but few of them possess high merit, though he was skilful in devising variations for the piano of the display type.

Czerny Djordje (Black George), original name **George Petrović** (1762-1817), also known as **Karageorge**, founder of the Karageorgević dynasty, which later ruled Yugoslavia. A Serbian of humble birth, he led a Serb revolt against the Turks in 1804 and eventually, in 1806, succeeded in making himself master of Belgrade, having been secretly helped by the Russians. He was (1808) recognised as hereditary chief of the Serbs. But in 1813 the Russians were no longer able to aid him, owing to their being involved in war themselves, and he was defeated by the Turks and forced to flee to Austria. His rival during his absence was Miloš Obrenović (q.v.), who, on C.'s return to Serbia in 1817, had him murdered, Obrenović himself having in the interval assumed the leadership of the Serbians.

Częstochowa, tn of Poland, in Katowice prov., 40 m. N. of Katowice (q.v.). It stands on the Warta riv., and is a railway junction on the Warsaw-Vienna route. From 1815 until 1919 it was in Russian Poland. The tn has a famous monastery, in which is a pilgrimage shrine of 'Our Lady, Queen of Poland.' There is an important iron and steel industry, and there are textile, chemical, and other manufs. Pop. 145,000.

D

D: 1. Fourth letter of nearly all the anct and modern alphabets. It is the exact counterpart of the Semitic *dalath* (including modern Heb.) and the Arabic *dal*, as well as of the Gk *delta*. The Etruscans had no use for *d*, but the Romans—who borrowed their script from this race—created their alphabet before the Etruscans had time to reject this letter. The shape of **D** was slightly modified in the course of time. It was originally, in the Semitic alphabet, an irregular triangle (at a later stage, with a tail added to the right) and became a regular triangle in the Gk character, *delta*. In the Rom. alphabet it became rounded, *D*. The minuscule was formed by lengthening a part of it, *d* from *D*. The sound of **D** is the soft dental mute, though really not a true dental in Eng., being sounded by placing the tongue against the top of the gum. See ALPHABET.

2. In Rom. notation, signifies 500, being half of the symbol *CID*, earlier form of *M* (1000).

3. In music, is the second note of the scale of C major. The key of **D** major contains *F#* and *C#*, and its relative minor is *B*. The key of **D** minor has *Bb*, and is relative to the major key of *F*.

Dab, salt-water fluke, or *Limanda*, a fish which is closely allied to the plaice and flounder in the Pleuronectidae, or flat-fish family. The names of sneaker, lemon, or smooth dab are often given to *Solea lascaris*, a sole.

Dabchick, popular name for the lesser grebe. See GREBE.

D'Abernon, Edgar Vincent, first Viscount and Baron, of Escher and Stoke d'A. (1857-1941), diplomat, b. Sleaford, Sussex, educ. at Eton and served in Coldstream Guards for 5 years. In 1882 he was appointed president of the council of the Ottoman Public Debt and in 1884 financial adviser to the Egyptian Gov. In 1889 he became governor of the Imperial Ottoman Bank. He was elected Conservative member for Exeter, 1899; defeated 1906 and again in 1910, when he contested Colchester as a Liberal. He was created a peer in 1914. In 1920 he was chosen to be the first Brit. ambas. to the Ger. rep. His appointment arose out of his experience as a financier, which, it was thought, would be valuable in view of the economic problems confronting Germany. He instigated the conference of experts which initiated the stabilisation of the mark and helped to revise the Dawes Plan (q.v.). Another notable achievement was the Anglo-Ger. commercial treaty of 1924. He was the initiator of the Locarno Pact, for it was at his instigation that Germany suggested the conference of the powers which made that agreement possible and led to

Germany's admission to the League of Nations. In 1926 he was made a viscount. In 1929, 3 years after his retirement, he headed a highly successful Brit. commercial mission to Argentina, and other S. Amer. countries. He pub. 3 vols. of memoirs, *An Ambassador of Peace*, 1929-30.

Daboecia Polifolia, or Saint Dabeoc's Heath, bushy evergreen shrub of small size, well fitted for planting in shrubberies and rockeries. It flourishes in Ireland and the Pyrenees.

Dabrowa Górnicza, Polish industrial city, in Katowice prov., 9 m. ENE. of Katowice. Coal-mining is the prin. industry, and iron and zinc founding are carried on. In 1795 *D.* became Prussian, and in 1815 was made part of Russian Poland; in 1919 it again became part of Poland. Pop. 28,000.

Da Capo, or *D.C.*, in music, placed at the end of a movement as a direction to return to the beginning of the movement and finish where the word 'Fine' is placed. The term is often *Dal Segno* . . . i.e. repeat from a specified sign only.

Dacca, tn of E. Bengal, Pakistan, 270 m. NE. of Calcutta, and cap. of E. Pakistan. It extends for 4 m. along the N. bank of the Buribanga R. There are many important buildings: the palace of the Nawabs of *D.*, the bank, Eng. church, Baptist mission buildings, and the Rom. Catholic cathedral. A mysterious sound called the Barisal guns is said to be caused by a gun lying at the bottom of the riv. calling to its anct mate, which stands on the Buckland Bund. The Lal Bagh fort, built in 1678, is the most picturesque monument of *D.*, which from 1905 to 1912 was the cap. of the prov. of E. Bengal and Assam. Though *D.* is expanding very rapidly, it retains much of its tradition, including the manuf. of muslins and of silver filigree work. *D.* Univ. now caters for 23,000 students.

Dacca, University of (Pakistan), estab. on 1 July 1921 under a Gov. of India Act. Based on the recommendations of the Calcutta Univ. Commission's report, it followed the lines of the later Eng. univs. but with residential facilities. No distinction was made of race, sex, creed, or class, but special attention was paid to the education of Muslims and to Islamic studies. After partition in 1947, when E. Bengal became part of Pakistan, the univ. was made responsible for the recognition and affiliation of all institutions of higher learning in the prov. It retained its teaching functions, however, and to-day has faculties of arts, science, law, agriculture, medicine, and engineering. Set in a fine parkland, the univ. grounds occupy over a sq. m., of which more than 100 ac. are playing fields.

The library holds some 150,000 books, and there are up to date laboratories, 5 halls of residence, 1 of which is for women, 6 constituent and over 50 affiliated colleges. The univ. grants doctors' degrees.

Dace, Dart, or Dare, popular names of the carp-like fish *Leuciscus leuciscus* of the family Cyprinidae, allied to the chub, roach, and minnow. It is a native of Europe and is found in deep, clear water in shoals. The average weight is less than 1 lb. and the length 8 in., but the fish is much sought after by anglers.

Dach, Simon (1605-59), Ger. poet, b. Memel. He studied at Königsberg Univ., where in 1639 he was appointed prof. of poetry. His verse is characterised by warm feeling and sincerity, as in *Das Lied von der Freundschaft*. One of his poems, written in Low German, was the source of Herder's *Änchen von Tharau*.

Dachau, tn in Bavaria, Germany, a few m. NW. of Munich, on the Amper, a trib. of the Isar. Notorious in the Second World War for one of the worst Ger. concentration camps (q.v.). Weiss, the Ger. commandant of the camp, and his 39 co-defendants to the charge of committing atrocities against the inmates were found guilty at a trial in Dec. 1945 by an Amer. military gov. court and duly sentenced. Some of those killed in D. were captured Amer. airmen.



T. Fall

SMOOTH-HAIRED DACHSHUND

Dachshund, badger-dog that came into England from Germany. It is not a fighter, but is a good house-dog. In sport it finds the fox or badger, but does not come to close quarters with them, merely barking incessantly until the hunters come up. The D. has a soft silky coat, and a very long body, the length from the back of the head to the root of the stern being 2½ times the height of its shoulder. Its colour varies, but much white is not desirable. Its other points are head long and narrow, with rather small, very intelligent eyes; ears long, broad, and silky, set low and carried back and close to the head, measuring from 13 to 14 in.; jaw strong and square; chest deep and narrow, with a prominent breast bone; forelegs very short and sturdy, well crooked; hind legs smaller in bone; feet

strong and well padded; skin thick, loose, and supple; coat short and strong; loin well arched and muscular; body long and low but not cloddy. Its weight is about 21 lb., a bitch about 15 lb. There are also long-haired, wire-haired, and miniature varieties of the breed.

Dacia, in anc. times the name of an extensive dist. N. of the Danube, corresponding roughly with the modern Rumania, Transylvania, and part of Hungary. Its inhab., the Daci (see also GETAE), were of Thracian origin. They began to trouble the Romans in the time of Augustus, and in the reign of Domitian, under their king, Decebalus, the Dacians forced their more civilised enemies to buy them off with an ann. payment. After a war lasting from AD 101 to 106, the Emperor Trajan (q.v.) made D. a Rom. prov., but it was abandoned by Aurelian about AD 275.

Dacier, André (1651-1722), Fr. classical scholar, b. Castres, Upper Languedoc. He was made librarian at the Louvre in 1694; became a member of the Academy of Inscriptions (1695), and of the Fr. Academy, being appointed in 1713 perpetual secretary to the latter. His works include eds. of Festus and Verrius Flaccus, and trans. of Horace, Aristotle's *Poetics*, Sophocles, Epictetus, etc. His wife, Anne Lefèvre (1654-1720), also pub. eds. and trans. of many classical authors.

Dacites (from Dacia, q.v.), class of volcanic rocks found in Dacia, Greece, N. America, and elsewhere. These rocks consist largely of felspar mixed with quartz, hornblende, and augite; their structure is sometimes crystalline and sometimes vitreous.

Dacoits (Hindustani *dakait*), members of armed gangs organised for robbery and murder. In 1887 there were reported to be over 9000 professional D. in India, and in one dist. alone (Gwalior) they murdered 46 persons. After the war with Burma (1885) dacoity was prevalent in the country for sev. years.

Da Costa, Isaac, see COSTA.

Dacotah, see DAKOTA.

Dacron, see TERYLENE.

Dacrydium, genus of ornamental evergreen conifers, family Taxaceae, about 17 species native to New Zealand, Tasmania, Australia, Malaya, Philippine and Fiji Is., etc. *D. cupressinum*, the rimu tree of New Zealand, and *D. franklinii*, Huon pine, resembling a weeping cypress, are moderately hardy in Britain. *D. colensoi*, Westland pine, *D. bidwillii*, mountain pine, and *D. biforme*, Manoa, are all of New Zealand, and valued timber trees.

Dactyl (Gk *daktulos*, a finger), in Lat. and Gk prosody, a foot consisting of 1 long and 2 short syllables; in Eng. prosody, 1 accented and 2 unaccented syllables. Dactyls, in prosody, is a name applied to metres which consist of a repetition of D., or of equivalent feet.

Dactylis Glon rata, Cock's-foot Grass, a species of Gram. aeae. It is perennial and common in fields and waste places of Britain, and is also well known over continental Europe, the Mediterranean, and Asia. It has a coarse bluish herbage,

endures drought well, and forms good grass for pasture.

Dactylology, see DEAF AND DUMB.

Dactylopterus, genus of Dactylopteridae, or flying gurnards, remarkable for the immense, fan-like pectoral fins possessed by its species, and used by them when they spring into the air to escape voracious fishes. *D. volitans* occurs in the Mediterranean; *D. orientalis* in the seas of warmer climates.

Daddy-longlegs, see CRANE-FLY.

Dado, in classical architecture, the cube at the base of a pedestal. The name is also commonly applied to the lower part of the wall of a room, from floor-level to the 'dado-rail' or 'chair-rail.' The D. may be panelled, or merely painted; and should be 2 ft to 3 ft high.

Daedalus, mythical Greek associated with the origins of sculpture and architecture. He was said to be a descendant of Erechtheus, King of Athens, but the legends seem to be Cretan in origin. He made a wooden cow for Pasiphaë (q.v.), the lustful wife of Minos, King of Crete, and the labyrinth for the Minotaur. Incurring the displeasure of Minos, D. made wings for himself and his son Icarus to fly with. Icarus fell into the Icarian Sea, but D. reached Italy, and proceeded to Sicily. D. was the reputed inventor of sails for ships. Many buildings and statues were attributed to him. He represents the time when wood was the chief material in use. See L. Cottrell, *The Bull of Minos*, 1955.

Daet, tn in the S. of Luzon Is., Philippines, a port of call at the mouth of the D. R. Pop. 19,880.

Daffodil, see NARCISSUS.

Dafydd ab Gwilym (c. 1320-c. 1380), Welsh nature poet, b. Bro Gynin, Cardiganshire. He developed and perfected the new *cynydd* metre. George Borrow, who trans. some of his poetry, wrote in *Wild Wales* that he had always considered him as 'the greatest poetical genius that has appeared in Europe since the revival of literature.'

Dagami, tn on the Hinahaan R., S. of Tacloban, Leyte Is., Philippines. It is an important centre for traffic. Pop. 20,361.

Dagden, see HUCMAA.

Dagenham, municipal bor. in Essex, England, including the areas known as D. Village, Becontree, Chadwell Heath, and a part of Hainault. The anc. church contains the fine tomb of Sir T. Urswyk, M.P. for London, 1461. A high tide flooded 1000 ac. of land here in Dec. 1707, but most of the area has been reclaimed and developed. The residential dist. comprises mainly houses constructed by the London Co. Council, with an increasing number of corporation houses (including a 'district heated' estate). Industries include motor car manuf. and engineering on a large scale, and pharmaceutical and chemical products. Pop. 114,588 (9000 in 1921).

Dagger, short blade of very anc. origin used for stabbing. In medieval times it was called the *misericorde*, and served to penetrate the armour-joints of an overthrown adversary. It was worn attached

to the sword-belt on the right side; the hilt and scabbard were often richly decorated. Other varieties were the baselard, poniard, dirk, and stiletto. Famous oriental D.s are the Malay *kreese* (*kris*) and the Indian *khullar*.

Daghestan ('Mountainous Country'), autonomous rep. in the N. Caucasus, adjacent to the Caspian Sea. It is situated largely on the NE. slopes of the main Caucasian range, and has oil and natural gas deposits. Area 14,700 sq. m.; pop. under 1,000,000, mostly Caucasian-speaking Avars, Dargins, Lezgians, and many smaller tribes, also Russians, Kumyks (q.v.), Azerbaijanis. There are metalworking, and food industries, and live-stock breeding, agriculture, and horticulture are practised, as well as old crafts (carpets). The cap. is Makhachkala. The area was gradually annexed by Russia 1722-1859 (see SHAMIL). D. Autonomous Rep. was formed in 1920. See W. Kolarz, *Russia and Her Colonies*, 1952.

Dagnan-Bouveret, Pascal Adolphe Jean (1852-1929), Fr. painter, b. Paris, one of the representatives of the *plein-air* school. Early in his career he was 'classical' in his subjects, but presently turned to scenes of everyday life, and his 'Wedding Party', 'Le Pain bénit,' and, above all, his 'Breton Pardon' made him famous.

Dagö, see HNUMAA.

Dago (corruption of *Diego*), nickname given on Eng. and Amer. vessels to Sp., Portuguese, and It. sailors; also in the U.S.A. to It. immigrants.

Dagoba, see TOPE.

Dagobert I. (d. 639), Merovingian king of the Franks from 629, son of Cloaire II. He reunited the Frankish Empire, but it was divided again at his death. He was also a patron of the arts, and a legal reformer. D. made Paris his cap.

Dagon, Philistine deity probably taken over from the Canaanites. He was apparently an agric. deity, his name being derived from Heb. *dagan*, corn. Jewish tradition represents him as half man, half fish, but no evidence supports this; it is probably a legend suggested by the similar Heb. word *dagh*, fish. No more is known of D., except that his temple in Gaza was destroyed by Jonathan Maccabaeus.

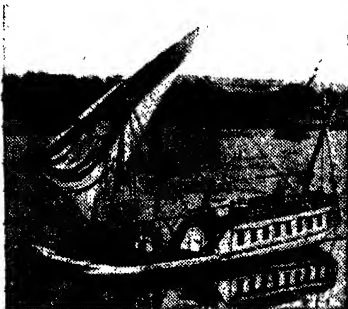
Daguerre, Louis Jacques Mandé (1789-1851), Fr. painter, inventor of the daguerreotype, b. Cormeilles, Seine-et-Oise, and in early life was an inland revenue officer. Afterwards he became an artist, and with Pierre Prévost executed a number of panoramic views. In 1822 he estab. a pictorial exhibition called the diorama, which was so successful that he opened another one in London. But his great ambition was to produce permanent pictures by means of sunlight, and in this endeavour he was joined by J. N. Niepce, who had already been working for years at the same problem. Niepce d. in 1833, but D. persevered until he succeeded in producing such pictures on an iodised silver plate, called after him daguerreotypes. He wrote many works on this subject, including *Historique et description*

des procédés de daguerréotypie, 1839. His success was rewarded with the decoration of the Legion of Honour, and annuities for himself and Niepce's representative. See A. Mentienne, *La Découverte de la photographie en 1839*, 1892.

Daguerreotype, see PHOTOGRAPHY.

Dagupan, municipality and port in Luzon, Philippine Is., exports sugar, corn, copra, rice, and salt. Pop. 43,838.

Dahabiyeh, Nile passenger boat, something like a decked barge with a sharp prow, of shallow draught, and carrying one or more sails. Tourist D.s are often propelled by steam.



E.N.A.

A DAHABIYEH NEAR ASWÂN

Dahl, Johann Kristen Clausen (1788-1857), Norwegian landscape painter, particularly fond of striking effects in light and colour. One of his best pictures is an 'Eruption of Vesuvius,' another 'Dresden by Moonlight.'

Dahl, Michael (1656-1743), portrait painter, b. Stockholm. He settled in London in 1688, and obtained considerable patronage. He painted a portrait of Queen Anne, and also a series of portraits at Hampton Court. He was extensively employed by the nobility, but his work is inferior to that of Kneller with whom he has been compared.

Dahl, or Dal', Vladimir Ivanovitch (1801-72), Russian ethnographer and lexicographer, of Dan. family. Under the pseudonym Kazak Lukaniskij he wrote many stories of Russian life. He studied Russian customs, folklore, and dialects and collected Russian proverbs, superstitions, etc. His main work, however, is a great dictionary of the Russian language. The complete collection of his works, in 10 vols., was pub. in St Petersburg in 1897-8.

Dahlak, or Dahalak, is. group off the coast of Eritrea, situated in the Red Sea off the bay of, and about 30 m. E. of the port of, Massowa (Massawa). The group comprises 3 larger is. with numerous rocks, and was known to the Romans for its pearl fisheries. Oil may exist here, and a concession for exploration is being negotiated (1956).

Dahlgren, John Adolphus Bernard (1809-70), Amer. admiral, b. at the Swedish consulate, Philadelphia. Serving in the U.S. Navy from 1826 to 1847, he was then transferred to the ordnance dept. and there invented the gun called by his name. When the Civil war broke out he was placed in charge of the navy yard at Washington, and in 1862 was made Chief of the Bureau of Ordnance. In 1863 he was made rear-admiral, and commanded the blockading fleet off Charleston until the end of the war.

Dahlia, genus of Compositae composed of 12 species of Mexican plants. In Britain sev. have been planted, but only *D. variabilis* has fl., and given rise to very many beautiful varieties known to our gardens. In its wild state it is a bushy, herbaceous plant, 7 or 8 ft. high, with single purple or lilac flowers of no great beauty, but in cultivation it sports endless varieties in stature, leaves, and flowers, and in the double forms both ray and disk florets are ligulate. The name of the plant was given to it in honour of the Swedish botanist Dahl.

Dahlmann, Friedrich Christoph (1785-1860), Ger. historian and politician, b. Wismar, educ. at Copenhagen and Halle. In 1837 he was banished from Hanover for upholding popular rights against the king; in 1848 he propounded a scheme for establishing a constitutional monarchy to include Prussia and all other Ger. states. His chief works were *Quellenkunde der deutschen Geschichte*, 1830; *Politik*, 1835; *Geschichte Danemarks*, 1840-3; and *hist. of the Eng. and Fr. revolutions*.

Dahme, Ger. tn in the dist. of Kottbus, on the D. riv., 35 m. WNW. of Kottbus (q.v.). It has anc. walls and an 18th cent. castle, and has textile and tobacco manufs. Pop. 6,400.

Dahn, Felix (1834-1912), Ger. historian and novelist, b. Hamburg. He studied law in Munich and Berlin, and became prof. successively at Munich, Würzburg, and Königsberg, and finally rector of Breslau Univ. in 1895. He wrote sev. important books on jurisprudence, but is more noted for his hist. and historical romances. The former deal with the very earliest records of Germany, his greatest work, *Die Könige der Germanen* (20 vols.), 1861-1908, ending with the dissolution of the Carolingian Empire. His best known romance, *Ein Kampf um Rom*, 1877, enjoyed great popularity in Germany. Besides these he pub. a good many vols. of poetry, especially ballads, founded on early Ger. legends. A collected ed. of his stories and poems was pub. (21 vols.) at Leipzig. See life by H. Meyer, 1913.

Dahomey, colony in Fr. W. Africa with an area of 43,232 sq. m. and a pop. of 1,614,000 (1955). It is bounded on the E. by the Fr. mandated ter. of Togo, on the N. by the Fr. Sudan, on the E. by the Brit. colony of Nigeria, and has about 70 m. of coast line. For 200 years a Negro kingdom, it was taken by the Fr. in 1892. The native army was famous for its detachment of 800 Amazons. D. is flat near the coast; the interior consists of undulating plains and plateaux, with

occasional stretches of forest. The principal are Porto Novo (pop. 30,400), Cotonu (the chief port and commercial centre), Whydah, all on the coast, and Abomey in higher country. The natives, mostly fetish worshippers, grow maize, manioc, yams, and coffee. Groundnuts and palm oil and kernels are the chief exports. In the N. cattle are reared. Cotton cultivation shows promise of becoming an important industry. The colony is relatively well served by 3238 m. of good roads, of which 871 m. are excellent. There is a metre gauge railway from Cotonu to Parakou, 247 m., and sev. shorter lines. The natives are pure Negro. See J. Baillard, *Peuple noir*, 1935; M. J. Herskovitz, *Dahomey: an Ancient West African Kingdom*, 1938; C. Hanin, *Occident noir*, 1947.

Dai Nippon, see JAPAN; NIPPON.

Daihan, see KOREA.

Dáil Éireann, House of Representatives of the National Parliament (Oireachtas) of Ireland, which also comprises the President and a Senate (Seanad Éireann). D. É. is provided for in the Constitution of Ireland (operating from 29 Dec. 1937), in succession to the Constitution of Saorstát Éireann (Irish Free State), which had operated from 6 Dec. 1922 and provided for a D. É. (originated in Jan. 1919). Members are elected by the votes of citizens of both sexes who have reached the age of 21. Election is by proportional representation (q.v.). The number of its members is 147; a chairman (Céann Comhairle) and a deputy chairman are elected from members. Proceedings are in Irish or Eng. Legislation dealing with finance may be initiated in D. É. only and, on being passed by D. É., is sent to Seanad Éireann for its recommendations, which may be accepted or rejected by D. É., the bill being then deemed to be passed by both houses. The gov. are customarily chosen from the majority party (or parties) in D. É. and are responsible to that house. The same D. É. cannot, by law, continue for longer than 5 years. The President of Ireland summons and dissolves D. É. on the advice of the Taoiseach (Prime Minister), who is appointed by the President on the nomination of D. É.; other members of the gov. are appointed by the President on the nomination of the Taoiseach with the previous approval of D. É. The Taoiseach, the Tánaiste (Deputy Prime Minister), and the minister for finance must be members of D. É.; other gov. members must be members of D. É. or Seanad Éireann, not more than 2 being members of Seanad Éireann.

'Daily Chronicle', former daily newspaper, which came into existence in London in 1855 as the Clerkenwell News, and was originally composed chiefly of small advertisements. In 1877 it was bought by Edward Lloyd and issued as a daily paper of Liberal views. It was purchased in 1918 by Lloyd George. In 1929 Wm Harrison, chairman of the Inveresk Paper Company, bought a controlling interest in the D. C., together with its associate papers. In 1930 it was

absorbed by the *Daily News* (see NEWS CHRONICLE).

'Daily Dispatch', former daily newspaper pub. in Manchester, founded in 1900 by the Hultons. It was amalgamated with the *News Chronicle* (q.v.) in Nov. 1955.

'Daily Express', the leading paper of the Beaverbrook group, estab. in 1900 by Charles Pearson & Company, as a 4d. paper. It was not until it passed into the control of Lord Beaverbrook (q.v.) in 1914 that it made headway against the competition of other popular dailies. It has been calculated that its present circulation of over 4 million copies a day means that the paper is read by about 16,000,000 people. The most successful of the popular papers, it has the highest rate per column inch for advertisement space. In politics the D. E. is Independent, with a strong leaning towards Imperial ideas. Lord Beaverbrook was a prime leader in the agitation for Empire Free Trade. The D. E. is produced simultaneously in London, Manchester, and Glasgow.

'Daily Graphic', see DAILY SKETCH.

'Daily Herald', launched on 15 April 1912 (with a capital of only £200), as Labour's first daily newspaper. During the First World War years it was only found possible to publish weekly. In the days of George Lansbury's editorship (1914-19) the D. H. kept up a high literary standard with one poet, Gerald Gould, as its assistant editor, and another, Osbert Sitwell, writing leaders—often in verse. But unable to support itself, it was (originally on the initiative of Ernest Bevin) constantly subsidised by the Trades Union Congress. Later, Lansbury remained manager while the editorship was given to Hamilton Fyfe, well-known war correspondent of *The Times* and *Daily Mail*, and under Fyfe the circulation rose in 4 years from 130,000 to 450,000. Eventually, in 1929, the T.U.C. sanctioned a scheme for placing the paper on equal terms with its rivals. Retaining 49 per cent of its interest, with control of the paper's political policy, the D. H. passed into the hands of Odhams Ltd. The new paper was pub. on 17 March 1930, under the direction of J. S. Elias (later Lord Southwood), the man who had converted the *People* and *John Bull* from apparent failures into great successes. Popular newspaper 'stars' like Hanneen Swaffer and H. V. Morton were secured from other organisations. H. G. Wells was asked to write on world problems and Edgar Wallace on crime. The circulation jumped to well over a million in a night, and has progressed steadily. Politically, the D. H. has considerably moderated its tone. Not only Labour leaders, but distinguished writers from all walks of life, are regular contributors. In Aug. 1957 the T.U.C. agreed to a scheme which gave Odhams a publishing licence for 25 years; in return Odhams pledged themselves to preserve the original aims of the D. H.

'Daily Mail', newspaper first pub. in London on 4 May 1896, at 4d. The D. M. was the first exponent of modern Journalism. Its founder was Lord Northcliffe (q.v.), at that time Alfred Harmsworth,

and from the beginning his policy with the *D. M.* was to give the public what it wanted, presenting the news of the day in such a manner that it could be taken in at a glance. Lord Northcliffe had acquired previously the *Evening News*, and started the *D. M.* with initial cap. of less than £15,000. Under his direction the circulation of the *D. M.* grew until it was far larger than that of any other paper of the day, and sev. amazing scoops during the Boer war consolidated its position. Until his death in 1922, Lord Northcliffe was the dominant personality behind Associated Newspapers Ltd., the company formed to take over the *D. M.*, *Evening News*, and *Sunday Dispatch*. Politically the *D. M.* is Conservative in principle, but more often than not takes an independent line. The *D. M.* organises many exhibitions, one of the most successful of

latest news in pictures. Politically, the *D. M.*'s history has been chequered. Launched with no apparent political views in 1903, it supported the Liberals for six or seven years, conducted a violent anti-Socialist crusade from 1920-1934, supported a Conservative 'national' Gov. in 1935, and helped put the Socialists in power in 1945. The pattern, which seems eccentric, was due to changes of proprietorship or control. To-day, the *D. M.* is an independent national newspaper of the Left—without party affiliation. Its present daily circulation is nearly 5 million.

'Daily News,' see NEWS CHRONICLE.

'Daily Sketch,' newspaper founded in Manchester in 1909 as a penny picture paper. In 1925 it absorbed the *Daily Graphic* and was later acquired by Allied Newspapers Ltd. Later, under the ownership of Kemsley Newspapers, it changed its name once more to *Daily Graphic* until Dec. 1952, when the paper was purchased by Associated Newspapers Ltd., the Rothermere Group. Since then it has reverted to the title of *Daily Sketch*, and its then circulation of just over 600,000 now approaches one million and a quarter. It is politically independent and has become a 'tabloid' newspaper.

'Daily Telegraph,' the first penny newspaper pub. in London, founded in June 1855. It passed shortly afterwards into the hands of the father of the second Viscount Burnham (q.v.), and remained in that family until 1927, when it was sold to Sir Wm Berry, 1st (later Viscount Camrose, q.v.), Sir Gomer Berry (later Viscount Kemsley), and Sir Edward (later Lord) Liffé. The present proprietors are the second Viscount Camrose and his brother the Hon. Michael Berry. After editorial modernisation in 1930 the price, which had been 2d. for many years, was reduced to 1d. These changes were successful, for the circulation rose from 84,000 to 750,000 by the outbreak of war, and over 1 million as tonnage rationing of newsprint was abolished thereafter. The *D. T.* has always specialised in foreign news, and had many famous correspondents in all parts of the world. It was owing to the enterprise of the *D. T.* that Stanley was enabled to find the Congo, his undertaking having been originated by the paper, which also bore the expense of his search for Livingstone. In the same way, the *D. T.* assisted in the Assyrian discoveries of George Smith, and the exploration of Mt. Kilimanjaro by Sir Harry Johnston. Politically, the *D. T.* is independent Conservative. The new *D. T.* building, erected in Fleet Street between 1928 and 1930, is among the finest newspaper offices in the country. Since 1937 the *D. T.* has been amalgamated with the *Morning Post* (q.v.), the former Conservative daily.

'Daily Worker,' newspaper founded by the Communist Party in 1930 and in continuous publication since, except for a period of 20 months from Jan. 1941 to Sept. 1942 when it was suppressed under Section 2D of the Defence Regulations. In 1945 it was taken over by a co-opera-



LORD NORTHCLEFFE

which is the ann. Ideal Home Exhibition. Pub. simultaneously in London, Manchester, and Edinburgh, its circulation is still one of the largest in the world, well exceeding the 2,000,000 mark. Other eds. of the *D. M.* included one printed in Paris from 1905 to 1953; and an Atlantic ed., printed and pub. on board sev. of the larger liners from 1923 to 1932. The *D. M. Year Book*, founded in 1901, is popular among all classes for reference purposes on general subjects.

'Daily Mirror,' newspaper founded in London as a penny daily for women on 2 Nov. 1903, under the editorship of Mrs Mary Howarth. It was soon obvious that there was no public demand for such a paper and Lord Northcliffe converted it in twenty-four hours into an illustrated newspaper. In 1914 the first Lord Rothermere became chief proprietor, and a year later founded its companion paper, the *Sunday Pictorial*. The object of both papers has always been to provide the

tive society specially formed for this purpose: the People's Press Printing Society Ltd., which now has a membership of over 30,000 individual members and 900 Trade Union, Co-operative and Communist Party organisations. Since 1952 it has been pub. by the Daily Worker Co-operative Society Ltd., a subsidiary of the People's Press Printing Society Ltd. Its present circulation is more than 75,000 copies daily.

Dairiel, Sp. tn in the prov. of Ciudad Real, near a salt lake. It manufs. textiles and brandy. Pop. 71,000.

Daimiōs (great names), the feudal nobles of old Japan, who within their own domains were almost absolute, paying only nominal allegiance to the Mikado; the Samurai were their military retainers. Although the Shogun (temporal ruler) and D. lost their power in the revolution of 1868, the governing classes of Japan are still mostly of Samurai descent.

Daimler, Gottlieb (1834-90), motor pioneer, b. Schorndorf, Württemberg. After gaining experience in Germany and at Whitworth's, Manchester, he assisted Dr Otto in the development of his gas engine (Cologne, 1870), and became director of his factory. Conceiving the idea of increasing the power of oil and gas engines by making the working parts lighter, with greater velocity of rotation, he produced the first motor bicycle in 1885, followed in 1887 by a petrol-driven car. He founded the Daimler Motor Co., at Cannstatt in 1890. Benz of Mannheim, Panhard and Levassor of Paris, and others took up the idea, and D. engines have become universal.

Dairen, or **Dalny**, the customs port for Kwantung, China. At the end of 1937, when the leased ter. of Kwantung was under a Jap. governor-general, the seat of administration was at D. (or Tairend, formerly Dalny). In 1945 the ter., including D., was restored to China. The S. Manchuria Railway connects D. with Mukden, and D. is also connected by rail with Changchun (696 m.). The Chinese name is Talien-Wan. Pop. of tn and dist. (1951) 1,054,000.

Dairy. The word D. is the same as the Middle Eng. *deirie*, which was the place where the *dey* or maid-servant worked. It now denotes the place where the milk in its natural form and the cheese and butter are prepared. The milk of the cow is used all over the world for D. purposes, but in certain regions physiographical conditions have led to the dependence on sheep, goats, reindeer, camels, etc., for milk. In no other dept of agriculture has the celerity of advancement been greater than that in D. farming. In Great Britain the demand for milk and butter made by the people of industrial centres distant from the traditional dairying, or in fact cheese-making, dists., such as Cheshire, Ayrshire, Somerset, and the vale of Glamorgan, resulted in rapid expansion of the D. business. The invention of the centrifugal separator about 1878 created a revolution, whilst smaller progressive reforms may unquestionably be traced to the persistent

exertions of the Brit. D. Farmer's Association and to the D. shows held annually under its auspices since the year 1876. Moreover, this association acted as pioneer in the matter of providing technical instruction in D. farming; for it founded a D. school in the vale of Aylesbury, a school later estab. in Reading under the name of the Brit. D. Institute (now the National Institute for Research in Dairying, under the Executive Council of the Imperial Agric. Bureaux), and its example was followed by many municipalities all over the country.

Improvements in Appliances.—In all modern D.s centrifugal separators are now in use, and these consist essentially of a series of conical plates which revolve in a bowl at high speed. In this way the lighter butter fat is collected to the centre of the bowl, and thence removed through a tube, the watery and heavier portion of the milk being driven out from the outer zone through another tube. Small machines for 10 up to 100 gallons an hour are often still worked by hand, but separators worked by horse or steam power can deal with four or five times that quantity in the same time.

Pasteurisation has made milk 'safe' despite all the vicissitudes of transit. Electricity has brought hot water and refrigeration to the remotest farm. Pasteurisers, so named after the Fr. scientist, Pasteur, have been designed so as to destroy the tubercle and other bacilli which may be communicated to human beings through the medium of milk. Milk can be made completely safe by heating it to 145° F. for 30 min. (the holder method) or by heating it to 161° F. for 15 sec. (the high temp.-short time or H.T.-S.T. process). This latter method of pasteurisation has expanded so enormously in recent years that the classical holder method is already obsolete. The modern H.T.-S.T. process takes place in well-defined stages. *Regenerative heating* involves simply heating up the incoming cold milk by heat transfer from the hot freshly pasteurised milk. This warm milk is then passed on to the *heating section* where the milk is heated further by hot water, the temp. of the milk being raised to 161-162° F. Then it is maintained at this temp. in the *holding section* for 15 sec. Immediately the hot milk is cooled by *regenerative cooling* which is the exact inverse of regenerative heating, the cold incoming milk being used to cool the hot out-going milk. Finally the milk is cooled in a cooler, in which refrigerated brine is the cooling agent, to 38° F. so that it may be issued from the depot at 40-42° F. (a temp. at which milk keeps well). Butyrometers are the most convenient machines for testing the amount of fat in milk. Properly graduated testing tubes are filled with the milk to be tested and fixed on a rimmed metal dish which is then made to revolve rapidly. Standard sulphuric acid and warm water are required, chemical action as well as the principle of centrifugal force being involved in the testing. D.s in most urb. centres bottle their milk for delivery

to householders. See J. G. Davis, *A Dictionary for Dairying*, 1950. See also MILK.

Dairy Factories originated in America and thence spread to Europe. The first was a cheesery founded by Jesse Williams in 1860 in Onelda co., New York. His success in the venture led to the rapid estab. of similar factories and also of creameries, or butter factories, all over the States and Canada. Such was the mushroom growth of these factories that by 1866 there were 500 cheese factories in New York state alone. In England cheeseries were first instituted in 1870, when one was set up in Derby and another in Longford. But the enormous increase in the supply of milk from country to urb. dists. leaves a comparatively small surplus of milk for conversion into butter and cheese, a fact which accounts for the scarcity of D. F. in England relatively to the U.S.A. Moreover, foreign butter from Denmark, etc., and empire butter from Australasia, etc., are superior to the average butter produced in the U.K. The cheese and butter factory system was introduced from America into Denmark, Ireland, France, etc., with surprising success. To-day 1 trained butter-maker can work up in a creamery the cream taken from 700 cows. His product finds a speedy market by reason of its even quality. It is packed in refrigerator cars, and within 2 weeks of its churning can reach a consumer many thousand m. distant. Artificial fats are frequently added to skim-milk to produce a poorer kind of butter, full-milk cheese being manufactured at the same time in the same factory. In 1855 Grimwade first made use of powdered milk in England, and in America a combination of whole milk powder and extract of malt was sold in 1883. Since that time many patented processes have placed a number of dried milks on the market. The first condensed milk plant of America was estab. by Gail Borden in 1856 at Wolcottville, Connecticut. John B. Meyenberg patented his process for supplying unsweetened evaporated milk in hermetically sealed tins in 1884. Yet a further product of America is the factory-made ice cream. In 1851 Fussell of Baltimore estab. a plant for making ice, and afterwards erected other factories in Washington, Boston, and New York. Ice cream which is sold commercially must contain not less than 7-14 per cent of milk fat.

Dairy Farming. The successful management of dairy cows depends to a large extent on good feeding. As milk contains over 80 per cent of water a good supply of pure water is essential; epidemics of contagious diseases have frequently been traced to a polluted water supply. Grass is the cow's natural food and provides the cheapest form of milk production. In winter grass (and clover) conserved as hay or silage is commonly fed, but roots (such as mangolds) and kale are often used in addition. For high-yielding cows at all times, but especially in the winter, concentrated food such as oil-seed cake must be fed so that milk yields are maintained

at a high level. Thirty lb. of dry food a day is a sufficient allowance for the average cow, but the food mixture should be varied as much as possible. Cleanliness is absolutely essential in the cows, their sheds, and the milkers. The cow-houses, moreover, must be well lighted, ventilated, and drained. The milking parlour is preferable to the ordinary cowshed because it saves time in cleaning and washing down, no hay or straw comes into the building when cows are milked, and this makes clean milk production easier. Dust in the air from hay or straw is a frequent cause of dirty milk. Because the cow comes to the milker instead of the milker going to the cow, there is a shorter journey for the milk to reach the cooler, and considerable economy of labour use. The best-designed buildings for a dairy of about 50 cows should consist of 2 covered yards, separated by the milking parlour, the cooling room, and the boiler and sterilising unit. Each covered yard is divided down the centre; and the doors and gates are large enough to admit a cart or wagon to remove the dung or to carry straw. The cows are collected before milking in one yard and, after going through the parlour, go into the other. There are 2 bull pens, a number of calving pens, and calf pens in a third yard.

By seasonal price changes winter milk production has been encouraged by the Milk Marketing Board and now about half the country's milk supply is winter milk. Under this system the cows calve in autumn and so produce the bulk of their milk in the winter months. It necessitates feeding expensive foods and, in the colder and wetter parts, the cows must be housed throughout the winter. However, high prices are paid for the milk and so it is generally more profitable than summer milk production. Cows should remain in the milking herd for about 10 years, but in practice the figure is only 3-4 years. This is due to disease and emphasises the need for a high level of management and regular inspection by a veterinary surgeon. The eradication of tuberculosis is especially important. Normally cows are milked only twice daily, in the morning and evening, but in very high-yielding herds thrice daily milking is fairly common. It may be pointed out that England has no pure dairy breed of cattle to her credit, the dairy shorthorn, our most numerous breed and the pioneer of the dairy revival at the turn of this cent., still serving a dual-purpose standard—which is justified in a European country that must rely for meat on its dairy herd. Records of performance continue to show ann. improvements in yield, and the best Brit. herds already hold their own with dairy cattle in other countries, like Denmark and Holland. The distribution of milk was revolutionised by the growth of huge railway systems all over the country, and also by the invention of refrigerators. The former allow milk to be brought to London daily from places as distant as Derby, Gloucester, Dorset, etc., and even from Scotland, and the latter ensures the

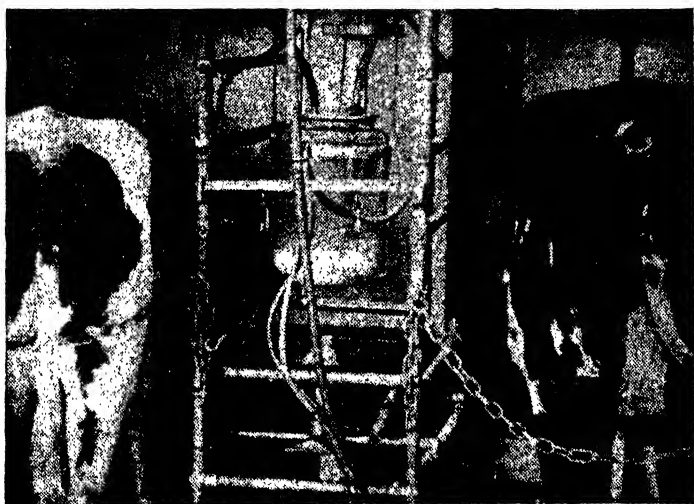
goodness of that milk by increasing its keeping qualities. Also, the bulk carriage of milk in glass-lined containers has overcome the noise and tedium of rolling churns on railway platforms.

Practically all the milk which is brought to London comes from different parts of England; other big towns are similarly supplied. The estimated production of milk for human consumption in England and Wales, according to the Ministry of Agriculture, is almost 2000 million gallons a year, and the estimated value of milk and dairy produce in England and Wales in 1954 was £336,000,000 (excluding poultry and eggs, which were valued at £147,000,000). Practically all the butter and cheese made in this country is used for home consumption, and large imports

ally been abandoned, but the subsidies on milk are still considerable. In 1955 they totalled £72 million, of which school milk accounted for £11½ million, and the Welfare Milk Scheme £33½ million. See also MILK. See H. Wallace and J. Watson, *Farm Livestock of Great Britain*, 1923; B. M. Cookson, *Dairy Cows and their Management*, 1944; F. Garner, *The Cattle of Britain*, 1944, and *British Dairying*, 1948; W. E. Petersen, *Dairy Science*, 1950; V. C. Fishwick, *Dairy Farming*, 1952.

Dais, family Thymelaeaceae, a monotypic genus of a deciduous S. African shrub, *D. cotinifolia*, the bark of which yields a very strong fibre, and is sometimes made into paper.

Dais: 1. In a medieval great-hall, the



United Dairies

DAIRYING: MECHANICAL MILKING

are made annually—butter chiefly from Denmark, New Zealand, Australia, and Ireland; cheese from New Zealand, Canada, the Netherlands, Italy, Australia, and America. The ann. review issued by the Commonwealth Agricultural Bureaux shows that the consumption per head of pop. in Britain of dairy products in 1954 averaged, for butter, 14 lb.; margarine, 18 lb.; cheese, 10 lb.; and eggs, 209. Under the Marketing Acts, 1931 and 1933, a Milk Marketing Board was set up to regulate the purchase and sale of milk. The Board also controls the artificial insemination service which is helping to improve 'the standard of many herds. After the war full marketing powers were returned to the M.M.B. In 1954 and at the same time rationing of butter and cheese was ended. The system of consumer subsidies has gradu-

ally been abandoned, but the subsidies on milk are still considerable.

2. In a college hall, a similar platform for 'the high table.'

Daisy, name given to sev. composite flowers, but in particular to *Bellis perennis*, the little plant which flourishes all over Europe and is common in fields and on lawns. The Fr. call the D. 'marguerite,' from the Gk word *margarita*, a pearl. The head is composed of yellow, tubular, and hermaphrodite florets of the disk, and white, ligulate, and pistillate florets of the ray; in wet weather and at night the surrounding involucre of bracts covers the florets. The dog D. or ox-eye D. (q.v.) belongs to the *Chrysanthemum* genus, and is known technically as *C. leucanthemum*, as also are the midsummer D. and the moon D., while the Michaelmas D. is a Brit. species of *Aster*.

Dajaukku, see DEIOCES.

Dakar, cap. of Fr. W. Africa, and the best port of the W. African coast. By a decree of 1924 D. and its surroundings, including Goree (or Goré) and Rufisque, were formed into a special ter. called *Circonscription de Dakar et Dépendances*. D. is of great strategic importance, being the nearest point in Africa to S. America and midway between S. America and S. Africa. It is an extremely important military, naval, and air base. The H.Q. of the governor-general, D. is a well laid out modern city. It became commercially important with the opening up of the St Louis-Dakar railway, completed in 1885, to top the Senegal Valley. This railway was connected with the Dakar-Niger line in 1923. There is a Pasteur Institute in D., and the Institut Français d'Afrique Noire. Exports through D. include groundnuts, palm-kernels, coffee, groundnut oil, cocoa, and timber. Minerals exported include bauxite and iron ore.

The importance of D.—significantly referred to by President Roosevelt as 'the Atlantic fortress of Dakar'—for the security of the W. hemisphere became obvious in the Second World War. D. commands terrestrially and in the air the immense federation that France created in W. Africa, ters. capable of being utilised against one or other sets of belligerents as reservoirs of men and material and as departure bases of attacks and campaigns. Soon after the collapse of the Fr. forces in France in 1940 Gen. de Gaulle (q.v.), commanding the Free Fr. forces, made an attempt to take D., but had to abandon his campaign there. He had erroneously believed that a large proportion of the Fr. pop. of Senegal would support him, as they had done in Fr. Equatorial Africa. But the Vichy Gov., learning of his project, sent 3 cruisers from Toulon, which unaccountably were allowed to get through the Straits of Gibraltar, and eventually arrived at D. On the morning of 23 Sept. 1940 de Gaulle sent emissaries to land at D., but they met with a hostile reception and were fired upon, while the batteries of the port opened fire on de Gaulle's warships and also on Brit. ships which were standing by to render assistance to de Gaulle. Fire from the Fr. battleship *Richelieu* was joined to that of the shore batteries and was returned, and the Brit. naval commander warned the Fr. authorities that submarines would be engaged if they left harbour. But in spite of this warning 3 Fr. submarines attacked the Brit. ships, with the result that 2 of the attacking submarines were sunk. The forces of de Gaulle tried to make a landing but were not successful, and, when it became evident that only a major operation of war could secure the fall of D., it was decided on political grounds to discontinue hostilities, as it had never been the intention of the Brit. Gov. to enter into serious warlike operations against those Frenchmen who felt it to be their duty to obey the command of the Vichy Gov. Following the Allied landings in N. Africa Adm. Darlan (q.v.) an-

nounced on the Algiers wireless on 23 Nov. 1942 that Fr. W. Africa had put itself under his orders, thus showing that it remained 'faithful to Marshal Pétain' (q.v.). Pop. (1943) 98,661. See D. Whittlesey, 'Dakar and other Cape Verde Settlements', *Geographical Review*, 1941; also *Dakar*, an official pub., 1931.

Dakiki, see DAQIKI.

Dakin, Henry Drysdale (1880–), Eng. chemist; occupied in research work at Herter Laboratory, New York city (1905–1920). During the First World War he made a solution for the treatment of wounds which was developed, in collaboration with Alexis Carrel (q.v.), as the Carrel-Dakin treatment of wounds by regular intermittent irrigation with D.'s solution. Known for researches in biochemistry, especially on enzymes. Awarded the Davy medal of the Royal Society (1941). Co-author of *Handbook of Chemical Antiseptics*, 1917.

Dakota, also called **James River**, from the name Rivière de Jacques given to it by early Canadian voyageurs. It rises in N. D., U.S.A., and flows S. through S. D., reaching the Missouri near Yankton, after a course of 710 m. It is not navigable. Its valley is very fertile.

Dakota, N. Amer. Indian tribe of the Sioulian linguistic family. One of the most famous of the tribes of the Great Plains, they engaged in many wars with other tribes and with the Whites, in 1876 annihilating General Custer and a whole brigade (the 'Custer massacres'). They now live in N. and S. Dakota and nearby states, and number almost 40,000.

Dakota, North, see NORTH DAKOTA.

Dakota, South, see SOUTH DAKOTA.

Dal, or **Dalälven**, riv. in Sweden, 250 m. in length. It is formed by the confluence of the Rs. Oster and Vester Dal Elf, and enters the Gulf of Bothnia about 60 m. from Upsala.

Daladier, Edouard (1884–), Fr. statesman, son of a baker, b. Carpentras, Vaucluse. He became a school teacher; and then served with distinction in the First World War. In 1919 D. was elected as a Radical-Socialist deputy. He held various ministerial posts from 1924; and succeeded Herriot as chairman of the Radical-Socialist party in 1927. D. was premier for some months in 1933, again for a short time in 1934, and from 1936 served as war minister in various Popular Front govts. He was premier again April 1938–March 1940, remaining in charge of the war ministry as well. D. was one of the signatories of the Munich Pact (q.v.), Sept. 1938. He was regarded as France's 'strong man,' ruling by decrees and arranging for a two-year postponement of Fr. elections in July 1939. His subsequent majorities were no longer Popular Front (Communist-Socialist-Radical), but now extended considerably to the Right. When the Chamber became critical of his personal rule and demanded a more vigorous prosecution of the war, D. resigned (21 March 1940). He retained for a time first the war ministry, then the foreign ministry under Reynaud, but was removed

from the gov. in June 1940, and after the Fr. collapse he was detained by the Pétain Gov., and interned by the Gers. He was released in 1945; became a member of the constituent assembly in 1946, and a member of the national assembly in 1947. Pub. *The Defence of France* (1939).

Dalaguete, municipality in the is. of Cebu, Philippine Is. Corn, coffee, cocoa, manila hemp, etc. are produced and fish caught. Pop. 29,353.

Dalai Kul, small is. in Lake Kossol, Kossol Gol, or Kosgol, Mongolia, 130 m. SW. of Lake Baikal. The is. is held by the native Buddhists to be the navel of the earth, and is therefore considered holy ground. Lat. 51° N., long. 100° 30' E.

Dalai Lama, in Tibet the arch priest of Lamaism, revered as the living incarnation of deity, always present on earth in him. See LAMAISM.

Dalai Nor (Holy Sea): 1. Lake of Mongolia, near the frontier of E. Siberia and the great bend of the Argun R., in lat. 49° 10' N., long. 117° 20' E. Also called Kulun Nor. It is fed by the Kerulen R., but is now rapidly drying up, and has ceased to send any water into the Argun.

2. Small lake of Inner Mongolia in lat. 43° N., long. 116° 30' E.

Dalarna (the Dales), or **Dalecarlia**, anct. prov. of Sweden, lying NW. of Stockholm, and stretching from the Norwegian frontier nearly to Gefle on the Baltic. The dist. is now called Kopparberg. The Dalesmen still retain their anct costume and dialect, and have always been noted for bravery and independence. In 1434, led by a miner, Engebrecht, they rebelled against the tyranny of Eric of Denmark, and when, in 1523, Gustavus Vasa freed Sweden from the Danes, his best helpers came from D. The dist. is to a great extent covered with forest, but agriculture is carried on where possible, and there are very productive iron mines, with large works for smelting, blasting, and rolling, also saw-mills and wood-pulp factories. Copper mines at Falun, the chief tn, are almost exhausted. Pop. 276,172.

Dalat, tn situated in the Lang-bieng plateau in Cochinchina (q.v.), on the Kam-ly river about 5000 ft above sea level. There are good hotels and many European-style villas. D. serves as a holiday centre and hill-station for the inhab. of Saigon (q.v.), since the climate is pleasantly cool. It is noted for its unspoiled scenery which includes pine forests, waterfalls, etc.

Dalbottle, burgh and tn of Kirkcudbrightshire, Scotland, situated on D. Burn, 14 m. SW. of Dumfries. There are important granite quarries in the neighbourhood; the materials for the Liverpool docks, Thames embankment, and other public erections have been taken from here. There are also granite-polishing works, and grain and glove and hosiery mills. Small vessels can approach quite close to the tn up the mouth of the burn. John Balliol, founder of Balliol College, Oxford, lived in the neighbourhood. Pop. 3288.

Dalberg, name of a noble Ger. family whose ancestors in the 12th cent. were

hereditary chamberlains of the bishop of Worms. In 1494 Maximilian I. granted them the right of claiming the first knighthood at each coronation.

Johann Dalberg (1455-1503), bishop of Worms, was a great Renaissance scholar; he founded the first Gk chair at Heidelberg.

Karl Theodor von Dalberg (1744-1817), prince-bishop of Mainz, a friend of Goethe and Schiller, ruined his career by siding with Napoleon, who made him prince-primate of the short-lived Rhine Confederation, 1807. The D. family is now extinct, but its last heiress married an Englishman, and her son was created first Baron Acton (q.v.).

D'Albert, Eugène, see ALBERT, EUGÈNE.

Dale, David (1739-1806), philanthropist, b. Stewarton, Ayrshire, was in early life a Lanarkshire weaver. Engaging in the importation of Fr. yarn, he prospered and estab. cotton mills at New Lanark and also the first Turkey-red dye works in Scotland. He seceded from the Church of Scotland and founded the 'Old Independents,' a communion with congregational principles but with unpaid pastors, of which he was chief pastor for the rest of his life. A kind employer, he was a munificent benefactor, especially to Glasgow, and was also interested in educational work. His son-in-law was Robert Owen (q.v.). See memoir in R. Chambers' *Biographical Dictionary of Eminent Scotsmen*, 1835.

Dale, Sir Henry Hallett (1875-), scientist, b. London and educ. at Cambridge and St Bartholomew's Hospital; he graduated 1897 and was M.D. 1903. From 1904 to 1914 he was director of the Wellcome Physiological Research Laboratories and then joined the staff of the Medical Research Council, being director of the National Institute for Medical Research, 1928-42. He was a member of the Scientific Advisory Committee to the War Cabinet, 1940-7 (chairman, 1942-7), and Fullerian prof. of chemistry at the Royal Institution, 1942-6. Since 1936 he has been chairman of the Wellcome Trust. D. was elected a fellow of the Royal Society in 1914, was its secretary (1925-35) and president (1940-5). He was president of the Royal Society of Medicine (1948-50) and has held many other distinguished offices in the medical and scientific world. His contributions to scientific research include the isolation of ergotoxine, the active principle of ergot, studies on the action of pituitrin and acetylcholine, and on the chemical medication of nervous impulses. For this last work he shared the Nobel Prize for medicine in 1936. He has also had considerable success in his endeavours to obtain international agreements for the standardisation of a number of biological preparations. He was knighted in 1932 and appointed to the Order of Merit in 1944. See *British Medical Journal*, 4 June 1955.

Dale, Robert William (1829-95), theologian and Congregational minister, b. London. Educ. Spring Hill College, Birmingham—training ground for the Congregational ministry—and at London Univ. Took part in the political life of

Birmingham as a Liberal until the introduction of Home Rule by Gladstone, when he gave up politics. Took an important part in educational affairs, becoming manager of the National Education League and a leading member of the Central Nonconformist Committee. President of the Congregational Union, 1868-9—an honour for so young a man. In 1877 he accepted the post of Lyman-Beecher lecturer at Yale. Made honorary LL.D. of Glasgow Univ. in 1878. He was a prolific writer, his most important works being *The Atonement*, 1875, a work which gave him a high place among theological writers, and was in its time a text-book in many colleges; *The Jewish Temple and the Christian Church: Lectures in Preaching*; *A Manual of Congregational Principles*; and *Discourses on Christian Doctrine* (the most finished and powerful of his works). See life by A. W. W. Dale, 3rd ed. 1899.

Dale, coast vil. of Pembrokeshire, Wales, situated on Milford Haven, 7 m. W. of Milford. It is noted in hist. as the place where Henry VII landed with his Fr. followers on his way to Bosworth. Pop. 300.

Dalecarlia, see DALAINE.

D'Alembert, Jean, see ALEMBERT.

Dalgarno, George (1626-87), inventor of a deaf and dumb alphabet, b. Aberdeen. He was a schoolmaster in Guernsey and at Oxford. His *Ars Signorum*, 1661, contained ingenious suggestions for a universal language, based on the hypothesis that ideas could be expressed by universal characters. His *Didascalocophus, or The Deaf and Dumb Man's Tutor*, appeared in 1680. See under DEAF AND DUMB, or DEAF-MUTE.

Dalhousie, Sir James Andrew Broun Ramsay, first Marquess and tenth Earl of (1812-60), governor-general of India: educ. at Harrow and Christ Church, Oxford. He entered the House of Commons in 1837, and in the following year, on the death of his father, took his seat in the Lords. In 1845 he was president of the board of trade. In 1847 he went to India as governor-general. Not long after his arrival the second Sikh war broke out, and in 1849 the Punjab was annexed. While the arrangement for the future administration of the new prov. occupied much of this time, D. yet found leisure to introduce many internal reforms in India. Careful to interfere as little as possible with the religious and caste system, there were yet certain abuses that he could not but remove. Notably he legitimated the remarriage of Hindu widows, and used all the means in his power to prevent the old practice of suttee (q.v.). It is to D. that India owes the introduction of the telegraph and the railway. It was during his governorship that the second Burmese war occurred, and that Lower Burma was added to the Brit. Empire. See life by W. Lee-Warner, 1904.

Dalhousie, 1. In E. Punjab State, India, 7687 ft above sea-level, in the Dhauladhar range, close to Kashmir frontier. It is popular as a sanatorium and hill resort.

2. Famous univ. in Halifax, Nova

Sootia. It has over 1500 students in attendance at its regular sessions. Sev. institutions, including univ. of King's College, are associated with it.

Dali, Salvador (1904-), Catalan painter, b. Figueras. Expelled from the Madrid Academy, he settled in Paris, interested himself in psychoanalysis and such forms of (then) unpopular art as 'art nouveau' and Pre-Raphaelitism, and joined the Surrealist group in 1929. His fantastic imagination is seen in smoothly painted but weird pictures like his 'The Persistence of Memory' (Museum of Modern Art, New York) in which a limp watch hangs on a tree. In some later works a religious theme subdues his fantasy, as in 'The Crucifixion,' bought in 1951 by the Glasgow Art Gallery, and 'The Last Supper,' lent to the National Gallery of Arts, Washington, in 1956.

Dalin, Olof von (1708-63), Swedish poet and historian, b. Vinberg, Halland. Being fond of Eng. literature he started (1733) the *Swenska Argus*, on the model of Addison's *Spectator*, and also wrote some satires in imitation of Swift. An historical epic, *Seenska Friheten*, 1742, and a hist. of Sweden, 1747-61, procured him the post of tutor to the crown prince. He composed also plays, epics, and occasional verse. The wit and satirical humour in which he clothed his ideas gained him great popularity. See M. Lamm, *O. F. Dalin*, 1908.

Dalkeith, mkt in 6½ m. SE. of Edinburgh, picturesquely situated on a tongue of land between the N. and S. Esk. It has an important grain market, while iron moulding, carpet weaving, brush making, and brewing are among the industries carried on. Extensive coalfields are in the vicinity. D. Palace (rebuilt in 1700) is a seat of the duke of Buccleuch. Nearby is Rosslyn Chapel (15th cent.), famous for its beautiful stone carving, especially that of the so-called 'Prentice Pillar'. Pop. 9022 (1954).

Dalkey, seaside resort of co. Dublin, Rep. of Ireland, at the entrance to Dublin Bay, 9 m. from Dublin. The ruins of St Begnet's Church stand near the tn hall, and there are remains of 2 of the 7 castles which guarded it and harbour in mediæval times. D. Is. is the largest of a group of rocky is. offshore. Pop. 4500.

Dallapiccola, Luigi (1904-), It. composer, b. Pisino, Istria; studied at the Conservatorio of Florence. First attracted international attention at pre-1939 festivals of the International Society for Contemporary Music. His *Songs of Captivity* were prompted by the Fascist 'racial laws' of 1938 and represent the expression in music of an imprisonment which was as much mental as physical. They consist of settings of the prayer of Mary Queen of Scots, and of passages from Boethius' *De Consolatione Philosophiæ* and Savonarola's *Meditation on the Psalm 'In te Domine speravi'*. His ballet *Marsia*, written about the same time, is on the classical legend of Marsya's contest with Apollo. His *Piccolo Concerto* for piano and orchestra of twenty-six players shows his desire to get the maximum possible variety

of rhythm, colour, and contrapuntal interest within limited resources. For most of his subsequent works he adopted a form of twelve-note technique. The first of these (1942) was three sets of lyrics for soprano and various combinations of instruments to words from the Greek anthology (Sappho, Anacreon, and Alcaeus). Among his recent works are two Studies for violin and orchestra; *Romances*, a dramatic setting for baritone and piano of fragments from the *Chanson de Roland*; and the operas *Volo di notte* (after Saint-Exupéry) and *Il prigioniero* (after *La Torture par l'espérance* by Villiers de l'Isle Adam). D.'s influence and that of his followers is growing in

Character of the War of 1812-1815, 1815. See G. M. Dallas, Life and Writings of Alexander James Dallas, 1871.

Dallas, George Mifflin (1792-1864), Amer. diplomatist and politician, b. Philadelphia. He graduated at Princeton College, 1810, and was admitted to the Bar, 1813; represented Pennsylvania in the Senate, 1831-3; attorney-general of Pennsylvania, 1833-5. In 1837 he entered the diplomatic service, and acted as Amer. ambas. in St Petersburg for 2 years. He was elected vice-president of the U.S.A., 1845-9; ambas. to Great Britain, 1856-61. He wrote *Series of Letters from London, 1869*, and a life of his father, A. J. Dallas, 1871.



Yugoslav Embassy

BUDVA, IN SOUTHERN DALMATIA

Italy, and is a very important factor in the cultural renaissance of that country.

Dallas, Alexander James (1759-1817), Amer. statesman and financier, b. Jamaica, W. Indies, educ. at Edinburgh; practised law in Jamaica, and in 1783, having taken oath of allegiance to the U.S.A., in Philadelphia. He held sev. important positions in the commonwealth of Pennsylvania, and in 1814 Madison made him secretary of the Treasury. D. also served for some months as secretary of war, and during that time reorganised the army on a peace footing. He found the gov. bankrupt, and left it with a surplus of more than \$20,000,000. Among his writings are *The Laws of the Commonwealth of Pennsylvania, 1700-1801, 1793-1801*, and *An Exposition of the Causes and*

Dallas, leading manufacturing city of Texas, U.S.A., with a pop. of 434,500, originated in 1841 with one log hut. Nearly half the cotton gins used in the world are made at D. There are large oil-fields, petroleum refineries, the largest inland cotton market, a municipal airport, 50 parks, and the S. Methodist Univ. with 6000 students. The fair held here is the largest ann. fair in U.S.A. There are Rom. Catholic and Protestant cathedrals.

Dallin, Cyrus Edwin (1861-1944), Amer. sculptor, b. Springville, Utah, where he became familiar with Red Indian life (his principal subject). He studied at Boston and Paris. Among his statues are 'Signal for Peace' (gold medal, Chicago, 1893), 'The Medicine Man'

(Fairmount Park, Philadelphia), 'Sir Isaac Newton' (Congressional Library), 'Don Quixote' (gold medal, St Louis, 1904).

Dallinger, William Henry (1841-1909), scientist, b. Devonport. Author of *Minute Forms of Life*, 1866; *The Creator and what we may know of the Methods of Creation*, 1887; and editor of *Dr. Carpenter's Microscope and its Revelations*, 1901.

Dallmeyer, Johann Hein (1830-83), Ger. optician, b. Loxten, Westphalia; came to London in 1851, and entered the employment of Ross, a telescope manufacturer, inheriting a large part of his business in 1859. He also took up the manuf. of photographic lenses with great success.

Dalmatia, name given to the strip of ter. bordering the upper Balkan coast of the Adriatic. It now forms part of the Yugoslav republics of Croatia, Bosnia-Herzegovina, and Montenegro (qq.v.). D. was in ant. times a part of Illyria (q.v.). In the Middle Ages it fluctuated between the dominance of Venice and Hungary. It passed to Austria in 1797, formed part of Napoleon's prov. of Illyria after 1805, and was returned to Austria by the Congress of Vienna (q.v.) in 1814. By the treaty of Rapallo (q.v.) in 1920, D., with the exception of the tn of Zadar, and the is. of Pelagosa and neighbouring is., was given to Yugoslavia. Following the Ger. occupation of Yugoslavia during the Second World War (see YUGOSLAVIA, *History*) the greater part of D. was acquired by Italy. At the end of the war Yugoslavia recovered its former ter. in D., and by the It. Peace Treaty of 1947 was given also those parts of D. which had been ceded to Italy by the treaty of 1920.

D. has a length of c. 350 m., but it is at no part more than 50 m. wide. The coast is much indented, gulfs and bays alternating with peninsulas and the is. of the Dalmatian archipelago (see CROATIA). The country is largely mountainous, and contains parts of the Dinaric Alps and the Karst plateaux (qq.v.). The majority of the inhab. are Rom. Catholic; they are mainly Slavs (q.v.), but many Italians are to be found along the coast. There is little industry, but there are fine harbours and important fisheries. Inland, the chief occupations are stock-raising and fruit-growing. The prin. tns are Zadar, Split, and Dubrovnik (qq.v.). Area c. 5000 sq. m. See F. H. Jackson, *Shores of the Adriatic*, 1908; P. Digoivi, *La Dalmatie et les problèmes de l'Adriatique*, 1944.

Dalmatian Dog, spotted carriage dog, originally kept in stables. It is active and muscular, a good runner, and a fine watch dog. Its colour should be pure white, with round black or liver-coloured spots bold and evenly distributed over its body. The average size of the spots is that of a shilling, but they vary from the size of a sixpence to the size of a florin. The puppy is b. white, and it is some days before the spots appear. The spots on the head, tail, and limbs are smaller than those on the rest of the body. Its other

points are: head long, with a flat skull, and quite free from wrinkles; muzzle long and powerful; eyes set fairly wide apart, bright and intelligent, black or dark brown in the black-spotted variety, yellow or bright brown in the liver-spotted variety; ears thin, well spotted, and rather small, carried close to the head; nose black or dark brown, according to its other markings; forelegs perfectly straight; hind legs with hocks well let down; feet round and cat-like; tail well spotted, long and tapering, carried with an upward curve; coat short, thick, and glossy. The average weight of a dog is 55 lb., of a bitch 50 lb.



T. Fall
DALMATIAN DOG

Dalmatic, form of old Rom. tunic, with large sleeves, originally worn under the chasuble (q.v.) or paenula by emperors, high officials, and bishops. It was adopted by the 7 deacons of Rome in their administrative duties as their normal dress, and spread to the rest of the W. Church as the distinctive vestment of deacons. It is now usually marked with two vertical stripes from the shoulder to the foot of the garment. It is still worn by bishops in full vestments under the chasuble, and in the E. Church is the special vestment of archbishops (in Russia of all bishops). See G. Dix, *The Shape of the Liturgy*, 1945.

Dalmellington, par. and vil. of Ayrshire, Scotland, 15 m. SE. of Ayr. Coal and iron have been worked from the 11th cent., and D. is a coal mining development area. Pop. 5000.

Dalmeny, vil. and par. of W. Lothian, Scotland, 1 m. SE. of S. Queensferry. Near are D. Park (17th cent.), the seat of the earl of Rosebery, and Barnbougle Castle. Pop. (with Queensferry) 4500.

Dalny, see DALIKEN.

Dalou, Jules (1838-1902), Fr. sculptor, b. Paris. He studied under Carpeaux and Duret. He had held office under the com. in the Louvre, 1871, and was obliged to flee to London, where he was given a professorship in the S. Kensington Museum, 1878; he returned to France in 1879. He always remained a disciple of Carpeaux, but his style is purer and his conception more vigorous. His chief works are 'Mirabeau delivering his famous Address in the States-General,

1789; in relief, which was placed in the Chamber of Deputies; 'The Triumph of Silenus,' 1897, in the Luxembourg, Paris; 'Bacchus consoling Ariadne,' 1892; 'The Triumph of the Republic,' 1900, in the Place de la Nation. He also executed busts of many of his contemporaries.

Dalradian, name given to a series of metamorphic rocks running from NW. Ireland through the Scottish Highlands into NE. Scotland. Called after the anct kingdom of Dalriada in W. Scotland. The D. rocks are younger than the Moine Series (q.v.) which they overlie, but their exact age is uncertain; they are believed to be late Pre-Cambrian or early Palaeozoic. The D. consists of regionally metamorphosed sandstones, limestones, and shales which have been metamorphosed to quartzites, marbles, and a great variety of schists and gneisses. Locally, migmatite complexes have formed. The structure of the D. is of great complexity and includes a huge recumbent fold which has inverted rocks over a tract up to 15 miles wide which can be followed through the Scottish Highlands and probably extends to Ireland. This is the so-called Loch Tay inversion.

Dalriada: 1. The anct name of the N. dist. of co. Antrim, Ireland, now known as the Route. The Dalriads were, by tradition, descendants of Kinda of the Long Wrist, chief of the Gaelic Scots.

2. Anct name of part of Argyllshire, settled by the Dalriads of Ireland about 498. They were defeated at Magh Rath, co. Down, in 637, but in 843 united with the Picts, under Kenneth MacAlpin, and formed the kingdom of the Scots of Alban.

Dalruadhain, *see* CAMPBELLTOWN.

Dalry: 1. Tn of Ayrshire, Scotland, 19 m. SW. of Glasgow, on the r. b. of the R. Garnock. Iron works were established here in 1845, though there is no iron industry at the present day, and the tn has tweed and hosiery mills and brickworks. Pop. 6400.

2. Vil. of Kirkcudbrightshire, Scotland, 4 m. NW. of New Galloway. Pop. 600.

Dalrymple, Sir David, Lord Hailes (1726-92), judge and historian, the great-grandson of the first Viscount Stair, educ. at Eton and Utrecht Univ. He was called to the Scottish Bar in 1748, becoming judge of the Court of Session as Lord Hailes in 1766. He is, however, chiefly remembered for his literary work, his friendships, and his controversies. Johnson, Burke, and Horace Walpole were among his friends. He was a strong traditionalist, especially in religious matters. His chief work is *Annals of Scotland*, 1776, dealing with the period 1057-1371.

Dalrymple, Sir James, first Viscount Stair (1619-95), lawyer and politician. He was prof. of philosophy at Glasgow from 1641 to 1647, when he was admitted an advocate in Edinburgh. He was appointed secretary to the commissioners sent to Charles II by the Scottish Parliament, 1650; lord president of the court of session, 1671. He was created Viscount Stair in 1690.

Dalrymple, Sir John, second Earl of

Stair (1673-1747), soldier and diplomat. He was educ. at the univs. of Leyden and Edinburgh, and in 1701 joined a Scottish foot regiment and served in Marlborough's campaigns. He succeeded to the earldom in 1707, and was made commander-in-chief of the forces of Scotland. He served with distinction at Oudenarde, Malplaquet, and Ramillies, and in 1743 fought at the battle of Dettingen.

Dalsert, vil. of Lanarkshire, Scotland, in Clyde valley, giving its name to a par. which includes Larkhall (q.v.), Ashgill, Netherburn, and D. Pop. of par. 17,500.

Dal'strov (Russian abbreviation for Far Eastern Construction Trust), large state gold-mining enterprise in the Magadan oblast of the Russian Far East, founded in 1930. Until 1953 it was subordinated to the Chief Administration of Corrective Labour Camps. *See also* BERZIN; KOLYMA; MAGADAN. *See* H. A. Wallace, *Soviet Asia Mission*, N.Y., 1946; V. Petrov, *It Happens in Russia*, 1951.

Dalswinton, estate and vil. of Dumfries, Scotland. It is noted as being the place where was launched an early steamboat designed by Symington, Miller, and Taylor (1788).

Dalton, Hugh (1887-), politician, educated at Eton and King's College, Cambridge. He became a lecturer in economics at London Univ. He first entered Parliament as a Labour M.P. in 1924. In Churchill's Coalition gov. he was Minister of Economic Warfare, 1940-2, and President of the Board of Trade, 1942-5. D. was chancellor of the exchequer 1945-7, when he resigned as the result of a Budget leakage. Later he was chancellor of the duchy of Lancaster 1948-50; minister of town and country planning 1950-1; and minister of local government and planning, 1951. His memoirs, *The Fateful Years*, were pub. in 1957.

Dalton, John (1766-1844), one of the greatest of Eng. chemists, b. Eaglesfield, Cumberland. His father was a weaver and Quaker. He himself kept a Quaker school for a time, and was afterwards partner in a school at Kendal. While at Kendal he commenced (1787) a journal of meteorological observations, the results of which appear in his *Meteorological Observations and Essays*, 1793, and other works. In 1793 he became a teacher of mathematics and the physical sciences in the Manchester New College, and it was in the following year (1794) that he made known the results of his investigations of colour-blindness, sometimes called Daltonism, from which he and his brother suffered. In 1801 appeared his important essays, *The Constitution of Mixed Gases* and *The Expansion of Gases by Heat*; and he followed up these researches by developing the atomic theory as an explanation of the facts of chemical combination in a paper read before the Manchester Philosophical Society in 1803. Pub. *On the Absorption of Gases by Water and Other Liquids*, 1805, and *A New System of Chemical Philosophy*, 1808-10. He was elected president of the Manchester Philosophical Society in 1817, received the medal of the Royal Society in 1825

'for his development of the chemical theory of definite proportions,' and was made a foreign associate of the Paris Academy of Sciences in 1830. He was made D.C.L. of Oxford, and LL.D. of Edinburgh. See also DALTON'S LAWS. See W. C. Henry, *Memoirs of the Life and Scientific Researches of John Dalton*, 1854; A. Harden and H. E. Roscoe, *A New View of the Origin of Dalton's Atomic Theory*, 1896; and lives by J. Nevillo-Palley, 1920, and W. A. Tilden (in *Famous Chemists*), 1921.



JOHN DALTON

Dalton, city of Whitfield co., Georgia, U.S.A., 114 m. NW. of Atlanta. It is a bedspread-manufacturing centre and also makes hosiery, yarn, textile machinery, chairs, and lumber. It was an important military centre during the Civil War. Pop. 15,970.

Dalton-in-Furness, par. and tn of Lancashire, England, 5 m. from Ulverston. The ruins of Furness Abbey are in the neighbourhood. It is the bp. of George Romney, the celebrated painter, whose tomb is in St. Mary's churchyard. Pop. 10,394 (1954).

Dalton Plan, experiment in educational reform initiated in 1920 at Dalton, Massachusetts, by Helen Parkhurst. It is similar in conception to the methods of Dr Maria Montessori (q.v.), striving to develop individuality by directing the child in self-chosen occupations and study. See Helen Parkhurst, *Education on the Dalton Plan*, 1922.

Dalton's Laws are two laws relating to the behaviour of gases. The first law is known as the law of partial pressure. It states that, in a mixture of gases, each gas exerts the same pressure as it would if it occupied the total volume: in other words, the total pressure of the mixture is the sum of the partial pressures of each gas. D.'s second law, usually known simply as D.'s law, states that if a mixture of gases is placed in contact with water or any other solvent, then the amount of

each gas dissolved by the solvent is directly proportional to the partial pressure of that gas. D.'s law is an extension of an earlier law stated by W. Henry, viz. that the amount of gas dissolved by a solvent is directly proportional to the pressure of the gas. See DALTON.

Daly, Sir Henry Dermot (1821-95), Brit. soldier, b. Daly's Grove, co. Galway, Ireland. During the Indian mutiny he distinguished himself at Delhi, where he was twice wounded. At the capture of Lucknow he was in command of a regiment of Hodson's Horse, and on the death of Hodson took command of the three regiments in the Oudh campaign. He became a major-general in 1870, lieutenant-general in 1877, and a general in 1888.

Daly, John Augustin (1838-99), Amer. theatrical manager and playwright, b. Plymouth, N. Carolina, U.S.A. He became dramatic critic to various New York papers—the *Sunday Courier*, *Express*, *Sun*, *Citizen*, etc.—from 1859 to 1869, when he opened a theatre, known as Fifth Avenue Theatre. This theatre was destroyed by fire, and in 1874 he opened another D.'s Fifth Avenue Theatre. D. had an excellent and most popular company, Miss Ada Rehan being for many years his leading lady. He toured in England and on the Continent with great success, and leased Daly's Theatre (q.v.), built for him by George Edwardes in Leicester Square, London, in 1893. He was also a clever playwright, and made adaptations from Fr. and Ger. plays. His own plays include *Pique*, *The Great Unknown*, and *The Last Word*.

Dalyell, or Dalzell, Thomas (c. 1599-1635) Scottish soldier. He served at the Rochelle expedition in 1628 and in Ireland following the outbreak of the 1641 rebellion. He fought against the Commonwealth army at Worcester (1651); he also served in the Russian army as lieutenant-general and fought against the Poles and Turks. He returned to Scotland at the Restoration and except for a brief interval in 1679 served as commander-in-chief of the Scots Army from 1661 until his death. He defeated the Covenanters in the Pentland rising, 1666. D. was noted for the eccentricity of his appearance.

Daly's Theatre, theatre in Leicester Square, London, built by George Edwardes and opened by J. A. Daly (q.v.) and his New York company with *The Taming of the Shrew* on 27 June 1893. The theatre was visited by Sarah Bernhardt in 1894, and again in 1895 in Sudermann's *Magda* and Rostand's *La Princesse lointaine*. From 1896 onwards it produced chiefly musical comedies, produced by its manager George Edwardes, which included *The Geisha*, 1896; *The Merry Widow*, 1907; and *The Dollar Princess*, 1909. It was demolished in 1934, and its site is occupied by a cinema.

Dalziel Brothers, firm of engravers, printers, and publishers, comprising George D. (1815-1902), Edward D. (1817-1905), John D. (1822-60), and Thomas Bolton D. (1823-1906), sons of Alexander D. of Northumberland, seven of whose sons

became professional artists. The original partnership was constituted by George, draughtsman and wood-engraver, and Edward, who, besides being an engraver, and who was responsible for extending the business to include publishing and printing. The authentic signature on the engravings of the D. B. is 'Dalziel sc.', only their earlier work being signed individually. Both Edward and Thomas were skilled book illustrators, particularly Thomas, whose best illustrations are to be found in early eds. of Wm Cullen Bryant's poetical works, and Jean Ingelow's poems, and notably in the ed. of *Pilgrim's Progress* pub. by Ward, Lock in 1865; in D.'s *Arabian Nights*, 1864; and D.'s *Bible Gallery*, 1880. Woodcuts by George D., who developed his skill under Charles Bray, the engraver, were also executed for the above works. George, though a skilled craftsman, had not the original talent of Thomas D., but he was a prolific engraver, producing alone or with his brothers numerous block engravings for many well-known pubs., such as the Abbotsford ed. of Scott and Charles Knight's Shakespeare, also for the periodicals *Punch* and the *Illustrated London News*, most of which blocks were made after drawings by contemporary artists of estab. reputation, such as Cruikshank, Doyle, and Leech. Later came engravings for the poems of D. G. Rossetti and of the paintings of Millais, Burne-Jones, and other Pre-Raphaelites; for Tennyson's poems (Moxon's ed., 1857); Lear's *Book of Nonsense*, 1862; and for *Alice in Wonderland*, 1865, and *Through the Looking Glass*, 1872—in which latter connection it may be noted that Edward D. was a fellow student of Tenniel at a London school in early manhood. Other works for which the D. B. made well-known engravings were Staunton's Shakespeare, from illustrations by Sir John Gilbert; *Lalla Rookh* from illustrations by Tenniel; and Goldsmith's works, from illustrations by George John Pinwell. See C. and E. Dalziel, *The Brothers Dalziel: a Record of 1840-90*, 1901; F. Colebrook, *Dalziel and the Dalspriests*, 1909.

Dalziel, par. of Lanarkshire, Scotland, situated on the Clyde, 12 m. S. of Glasgow. It includes part of Wishaw and Motherwell, and forms the chief centre of the Scottish Black Country. Traces of the old Rom. Watling Street are to be found nearby. There are large iron and steel works, and a number of engineering firms. Pop. 50,000.

Dam. Prin. types of D. are (i) masonry or concrete; (ii) rock-filled; (iii) earth. (i) The first type is the most popular for large reservoirs, and, owing to the advance in engineering knowledge during the past century, it is exceedingly stable and also built in the most economical way. It is generally triangular in cross-section, and the width at any horizontal section of the D. is governed by the consideration of stability; this requires that the resultant of the two stresses on any portion of the D., viz. the weight of the

masonry above the horizontal section and the force due to the pressure of the water on the fraction of the D. below it under consideration, shall pass within the middle third of the horizontal section. These D.s are made water-tight by concreting the water-face and the bottom of the D. (ii) The second type is cheaper though inferior to the masonry D. It is concreted on its water-face and its outer face consists of masonry carefully built. The space between the two walls is filled with quarry rock of all sizes. In order to make the D. more water-tight the concrete wall is continued downwards until an impervious stratum is reached. (iii) Earth D.s are the cheapest D.s if suitable material is



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SPILLWAY OF BRILLIANT DAM, BRITISH COLUMBIA

available close at hand. They are rendered water-tight by a core of clay that is carried downward until an impervious stratum is reached. Damage to the earth D. that would be caused by the overflow of the water after heavy rains is avoided by building a concrete waterway through the D. See also RESERVOIRS. See W. F. Creager, J. Austin, and J. Hinds, *Engineering for Dams*, 1945.

Damage to Property, see MALICIOUS INJURIES TO PROPERTY.

Damages, in law, the pecuniary compensation awarded to a plaintiff for the breach of a legal duty owed to him. General D. are those *presumed*, without proof of actual loss, to have been suffered as the result of that breach. Special D. are D.

actually suffered (e.g. loss of earnings) which must be proved. Nominal D. are given for a technical infringement of a legal right not involving actual loss. Exemplary or punitive D. are awarded to punish the offender, in addition to compensating the injured party, and may be given in actions for slander, libel, etc. Apart from cases of this character, the general rule is that the D. must be measured by the loss actually sustained, and that D. must be awarded on the principle that the injured party should be placed as nearly as possible in the position in which he would have been if the wrong had not been sustained. Another rule is that in a case where sev. persons are equally concerned in committing an injury, each is liable for the full amount. D. are recoverable for a breach of contract, a civil wrong, or a delict.

Damaghan, see DAMAGHAN.

Daman, or **Damão**, Portuguese settlement on the W. coast of India, some 100 m. N. of Bombay. Daman was first occupied by the Portuguese in 1558, and was finally ceded by the Marathas in 1780. The Indian Gov. are now pressing for its transfer to their authority together with all other Portuguese settlements on Indian ter.

Damanhur, or **Demanhoor**, cap. of the prov. of Beheira, Lower Egypt, on the Mahmudieh Canal, and on the railway line between Cairo and Alexandria. It has trade in cotton and woollen goods. Pop. 84,900.

Damaraland, ter. forming part of SW. Africa, Ger. until after the First World War, when it was mandated to the Union of S. Africa, together with the rest of SW. Africa. It extends inland from the Atlantic Ocean to the Kalahari desert, and lies between Namaqualand and Ovamboland. Part of the E. dist. is very mountainous; further inland lie well-watered prairies. The chief industry of the Damaras (or Herero), a nomadic tribe of Bantu stock, is cattle raising. Copper is found near Otavi, but the chief products of the country are feathers, skins, and ivory. Walvis Bay is the only good harbour. The chief settlements are Windhoek, Omaruru, Ojimbingue, and Otavi. Pop. about 30,000. See also HERERO.

Damascene, John, see JOANNES DAMASCENUS.

Damascening, or **Damaskening**, word referring to the watered lines on blades of weapons, and also to the gold and silver decorations that are incrustated on blades. The word is derived from Damascus, where the art originated and was discovered by Europeans at the time of the crusades. The watered pattern is produced by the process of forging, welding, and soldering rods of iron. The rods are twisted and then welded into one, leaving a fine watered or damascened surface. The gold and silver incrustations with which blades and hilts are ornamented are a typical craft of India and Persia. Gold or silver wire is laid on to a design which has previously been cut or scratched into the surface, and then the wire is hammered into position. Consult Col. T.

Hendley, *Damascening on Iron and Steel, as practised in India*, 1892.

Damascenus, **Joannes**, known as **Chrysorrhoeas** (the Golden-flowing), see JOANNES DAMASCENUS.

Damascenus, **Nicolaus**, philosopher and historian of the Augustan age and a friend of Herod the Great; the dates of his birth and death are unknown, and almost all our information of him is gathered from Josephus. Eusebius, and others who mention him. He wrote various works in Gk, philosophical and political in character, of which none are extant; an autobiography, of which portions have been preserved by Suidas and Josephus; and a universal hist. in 144 books, of which a few fragments remain. The best ed. of the extant portions of D. is that of J. C. Orelli (Leipzig), 1804.

Damascus (**Esh-shâm**), cap. of Syria. On three sides of the city rise the heights of Anti-Lebanon, whence comes the Barada R., spreading itself in seven branches over the great plain. Two of these branches are identified with the ant. Abana and Pharpar mentioned in the Bible. The plain of D., 500 sq. m. in area, is dotted with tns and vils., and is extremely fertile. The city, with its wooded background, presents a picturesque spectacle, for it has numerous mosques and other public buildings, many of which are of considerable interest. The Great Mosque, with its dome 120 ft high, was originally erected in the beginning of the 8th cent. by the caliph Waliph 'Abd-el-Melik. It took the place of a Christian church, which, in turn, had replaced a heathen temple three centuries earlier. The building has sev. times suffered from fire, notably at the hands of Tamerlane in 1401. 'The Great Mosque is immense; there is a great court, and portico of yellow marble, big as a piazza. The general effect from colours is lovely—the Imams' niches, doors, pulpit, worked in marble and mother-of-pearl, and old blue tiles outside under the columns; yet the general effect is absolutely simple' (Freya Stark, *Letters from Syria*, 1945). In the SW. suburb of Meidan is the Gate of God, through which the hadj (*hajj*), the great pilgrimage to Mecca, sets out. The tomb of Nur ed-Din is among the relics of the city, while another place of interest is the 'street called Straight' (Acts ix. 11), which runs a mile through the city from E. to W. Here, too, is Saladin's tomb. Commercially, D. occupies an important position, being now the centre of communications by road, rail, and air. The chief exports are grain, flour, inlaid wood, silken and cotton manufs., the apricot and other fruits. Its industries include the production of metal work, mother-of-pearl inlaid work, gold and silver work, perfumes, attar of roses, carpets, etc. D. gives its name to damsons (Damascene plums). Pop. about 400,000.

History.—The hist. of D. goes back to the days of Abraham. It was the scene of two great events in human destiny—the conversion of St Paul, and, according to Moslem tradition, a great decisive moment in the life of Mahomet, when he

resolutely turned his back once for all on the pleasures of the world. D. belonged in turn to Assyria, Persia, and Rome, and from 661-750 was the cap. of the Caliphate. After being the centre of struggle between the Moslems and Tatars, D. became the cap. of Syria within the Ottoman Empire (1516). Turkish dominion continued until 1 Oct. 1918, when D. was occupied by the allied troops under Allenby and the Arab troops under the Emir Feisal. Feisal estab. an Arab national state and reigned for nearly two years. Meanwhile the Fr. had obtained the mandatory control of the Syrian seaboard with headquarters at Beirut, and friction between the Fr. and the Arabs led to the occupation of D. on 25 July

and in Lancs; woollen D.s around Bradford and Halifax; and silk D.s near London. The industry was introduced into England in the 16th cent. by the Flemish weavers who fled from the persecutions of the duke of Alva. Originally it was brought from the E. to Byzantium by the Crusaders, thence it passed to Italy, and thence to France and Flanders.

Damaskinos (Damaskinos Papandreou) (1891-), Gk prelate and statesman, b. at Doryvoutsa. Bishop of Corinth, 1918, archbishop of Athens, 1937, leader of the Gk resistance in the Second World War. Appointed regent in the absence of the king, 1944, he handed over the gov. to George II on his return to Greece in accordance with a plebiscite in 1946.



DAMASCUS

E.N.A.

1920. Feisal fled to Bagdad. D. was never content under Fr. rule and several risings took place. Syria having remained under control of the Vichy Fr. gov., D. was taken by combined Brit. and Free Fr. troops on 21 June 1941. On 27 Sept. 1941 the independence of Syria was proclaimed at D., which became the cap.

Damask, name given to certain types of fabric with ornamental patterns. The term originated with the rich figured silks of Damascus, and was formerly applied to silk fabrics only; now the name is used also for woollen, linen, rayon, and cotton stuffs with floral or other patterns woven in the loom. D.s are now chiefly used for tablecloths, curtains, and upholstery coverings. Table linen D.s are manufactured at Belfast, Dunfermline, and Barnsley; cotton D.s at Glasgow, Paisley,

Damasus, the name of two popes: *Damasus I* (366-84), b. in Portugal about 304. He was elected pope by a large majority, but the minority resorted to violence and bloodshed in order to place Ursinus in the papal chair. The Emperor Valentinian I decided in favour of D. D. defended the faith vigorously against various heresies, was instrumental in bringing about Jerome's Vulgate version of the Bible, and did much for the preservation of the catacombs. He was the first of the many popes who were artists and patrons of art.

Damasus II, elected pope on 17 July 1048, but succumbed to malaria 23 days later.

Damavand, Mount, a volcanic cone, the chief summit of the Elburz Mts, situated to the N. of Tehran. It reaches a height of over 18,000 ft and carries a permanent

snow-cap. Sulphur is collected from its crater.

Dambul, or **Dambula**, vil. of Ceylon, situated about 40 m. N. of Kandy. It is famous for its cave temples.

Dames of the Order of the British Empire, see **ORDERS OF KNIGHTHOOD, GREAT BRITAIN AND IRELAND** (9).

Dame's Violet, or *Hesperis matronalis*, family Cruciferae, found in Europe and Asia; the flowers are pale lilac in colour and have no scent until the evening. In Britain the double variety is grown in gardens as a hardy perennial.

Damghan, or **Damaghan**, dist. and tn of Persia, on the S. side of the Elburz, N.E. of Semnan. It was formerly also called **Qumis**. In the vicinity are the ruins of the Parthian cap. Hekatompylos. It contains numerous Islamic monuments. Pistachios are exported. Pop. 12,200.

Damian, see **COSMAS AND DAMIAN**.

Damian, Peter, see **PETER DAMIAN, ST. Damien, Father** (religious name of **Joseph de Veuster**) (1840-89), Belgian missionary, b. near Louvain. Educated for a business career, but as a youth entered the Church, joining the Pious Congregation, a Fr. religious order having missions in the Pacific, and was ordained priest at Honolulu in 1861. In 1873, struck with the pitiful condition of the 600 lepers at Molokai Is.—whither the Hawaiian Gov. transported their lepers—D. volunteered to assume spiritual charge of the settlement at that place. For sev. years he worked alone, though later other resident priests assisted him for a time. In 1885 he himself contracted the disease, of which he ultimately d., though he continued with his work until his death. Some ill-conceived imputations on him by a Presbyterian clergyman evoked a fine eulogy from R. L. Stevenson in an *Open Letter to the Rev. Dr Hyde*, Sydney, 1889. The cause of his beatification was introduced in 1932. See lives by E. Clifford, 1889; F. E. Cook, 1889; Father Pamphile, 1889; and C. W. Stoddard, *The Lepers of Molokai*, 1885.

Damiens, Robert François (1715-57), Frenchman who attempted to assassinate Louis XV. He was b. near Arras, became a soldier, and later a menial servant in Paris. On 5 Jan. 1757, as Louis was stepping into his carriage to leave Trianon, D. stabbed him with a knife. He was caught and sentenced to death. He was executed by the most horrible tortures on 28 March 1757.

Damietta, tn and port of Lower Egypt, on the chief E. branch of the Nile, lying between the r. b. of the riv. and Lake Menzaleh. It is about 10 m. from the sea, but has been superseded as a port by Port Said and Alexandria. It still contains busy bazaars, has a considerable export trade in rice, and manufs. cotton, silk, and pottery. The old tn was fortified by the Saracens, but was sev. times taken by the crusaders. Louis IX captured the tn in 1249. When it was restored to the Saracens in 1250 they razed it to the ground, and it was rebuilt on its present site. Pop. 53,600.

Damiri, **Kemal Ed-din Mohammed Ibn**

Musa (1349-1405), Arabian jurist and naturalist. Spent his life in Egypt, being prof. of tradition at the Rukniyya in Cairo and at the Muslim univ. of El Azhar. Belonging to the Shafite school of law, he wrote a commentary on Nawāwi's *Minhaj ul-Talibin*, but is chiefly remembered for his literary and digressive *Hayat ul-Hayawan* (Life of Animals).

Dammara, name given to 4 species of *Agathis* or *Dammara*, coniferous trees from which much resin is obtained. The *A. australis*, or Kauri pine, produces very hard wood used for paving and masts, and is found in New Zealand.

A. dammaras produces resin and gums which are used as pitch and tar on ships and also in varnish; it has many other chemical derivatives. It is aromatic and is used in the E. as incense. See also **SAL TREE**.

Damme, in the prov. of W. Flanders, Belgium; formerly the port of Bruges, 5 m. N.E. of that city, but now merely a vil. In the Middle Ages D. ranked among the important European ports, the channel Zwyn connecting it with the North Sea. The channel silted up in the 15th cent., and the port was closed, Antwerp, on the R. Scheldt, taking its place. Pop. 1100.

Damnonii, Dumnonii, or **Damni**: 1. Brit. tribe inhabiting the W. peninsula (modern Devon and Cornwall) at the time of the Rom. invasions, and having Isca Dumnoniorum (modern Exeter) as their cap.

2. Aet. tribe of Perthshire, inhabiting the W. part of Fife and Kinross.

Dammum Absque Injura (Lat. 'damage without wrong') denotes damage done to a person for which the law provides no remedy. The complementary legal maxim is *ubi jus ibi remedium*, i.e. where there is a right there is a remedy. The exercise of ordinary rights or the use of one's property may cause other persons great inconvenience or damage without incurring legal liability (D. A. I.), e.g. temporary price undercutting by powerful traders to drive competitors out of business.

Damocles, favourite of the elder Dionysius, tyrant of Syracuse. Dionysius, to illustrate what kind of happiness wealth and birth brought to princes, placed him at a luxuriously spread table with a naked sword suspended over his head by a single horse-hair.

Damodar, riv. of W. Bengal, India, with a length of 350 m. It joins the Hugli close to Calcutta. The most important coalfield of India lies in the valley of this riv. It is now the scene of one of India's biggest hydro-electric projects.

Damon: 1. A Pythagorean of Syracuse, whose name is always associated with that of Pythias, properly Phintias. The latter was condemned to death for plotting against Dionysius I, tyrant of Syracuse, but was allowed to go and settle his domestic affairs while D. remained, pledging his own life for the return of his friend. Phintias came back just in time to redeem D., and Dionysius was so much impressed by their love for each other that he pardoned Phintias. Their love has become proverbial.

2. An Athenian musician and sophist, a teacher and close friend of Pericles. He was banished from Athens about 430 bc.

Dampier, William (1652-1715), mariner and adventurer, b. E. Coker, Somerset. He went to sea at an early age, and after voyaging to Newfoundland, Jamaica, and other places he took part in buccaneering expeditions in Central and S. America. He was marooned on the Nicobar Is. in 1688, but managed to reach Achin (Atcheen), and returned to England in 1691. In 1699 he was sent by the Admiralty to explore around Australia and New Guinea, and he gave his name to the D. Strait and Archipelago. On his way back he was wrecked on Ascension Is., but was rescued two months later. After an unfortunate expedition to the South Seas in 1703-7 he made his last voyage as pilot to Woodes Rogers (1708-11) in a privateering expedition. D. was associated with Alexander Selkirk (immortalised as Robinson Crusoe), who was rescued on his last voyage. *A New Voyage round the World* (1697) was D.'s chief work. D. was a very skilled navigator, and his book gives much valuable information told in the perspicuous style of the born travel writer; but it tells us very little of his doings among the Honduranian buccaneers. We know, however, that he must have taken part in many fights, particularly in the bay of Campeachy, and at Santa Maria and other places on the isthmus of Panama and on the Peruvian coast. He was, however, chiefly concerned, as is shown in his famous *Discourse of Winds* (1699), with natural hist., hydrography, weather, and all the phenomena one would come upon as an ocean traveller; the mere incidents of a buccaneering life did not interest him; he followed the calling chiefly as a means of acquiring navigational experience. There seems but little doubt that his great skill as a sailor inspired fear among the Spaniards. His *New Voyage, Voyages and Descriptions*, 1699, and *Voyage to New Holland*, 1703, 1709, all appear in John Masfield's ed. of the *Voyages* (2 vols., 1906).

Dampier, name of certain places in the E. Indies and Australia, which have been called after Wm Dampier (q.v.): 1. Archipelago off the NW. coast of W. Australia, comprising Enderby, Legendre, Dolphin, Rosemary, Lewis, Delambre, and sev. small rocky is.

2. Dampier's Land, a peninsula of Australia, lying between the Indian Ocean and King Sound.

3. Strait between the is. of Papua and Waigio 70 m. long and 35 m. broad. It affords the safest passage between the Indian and Pacific oceans.

4. Strait which separates Umhoi from the W. end of the archipelago of New Britain.

Dampremy, tn in the prov. of Hainaut, Belgium, 1 m. NW. of Charleroi. Coal is extensively worked. Pop. 11,200.

Damrosch, Walter Johannes (1862-1950), Amer. conductor and composer, b. Breslau, son of Leopold D. (1832-85), whom he succeeded as director of the New York Oratorio and Symphony Societies.

Founded D. Opera Company, 1895. From 1903 devoted himself to New York Symphony Orchestra. Founded school for military bandmasters during the First World War. Composed four operas: *The Scarlet Letter*, 1896, after Hawthorne; *The Dove of Peace*, 1912; *Cyrano de Bergerac*, 1913, after Rostand; and *The Man without a Country*, 1937; a *Manila Te Deum*, 1898; and incidental music to Euripides' *Medea* and *Iphigenia in Aulis*, 1915, and to Sophocles' *Electra*, 1916. Pub. *My Musical Life*, 1923.

Damselfly, see DRAGON-FLY.
Damson (a corruption of damascene), cultivated form of *Prunus insititia*, family Rosaceae. The plant is hardy, propagating largely by suckers, the bark is fragrant, and the fruit is late and abundant. The Damascene plum, as it is often called, is eaten raw, stewed, and preserved. A species of Simarubaceae, the *Simaruba amara*, a native of the W. Indies, is known as the mountain or bitter damson.

Dan: 1. Israelite tribe descended from its eponymous ancestor, D., the son of Jacob and Bilhah. The tribe settled in the valleys of Sorek and Ajalon, but spread northwards to Laish, which it rebuilt as D. (see Gen. xiv. 14, xxx. 5, 6; Judges i. xviii., etc.).

2. The most N. limit of the land of Israel (cf. the phrase 'from Dan to Beersheba'), near the sources of the Jordan. The site is identified with the hill Tel-el-Kadi, 3 m. W. of Banias.

3. Trib. of the R. Roanoke, N. Carolina and Virginia, U.S.A.

Dana, Charles Anderson (1819-97), one of the most famous of Amer. editors, b. Hinsdale, New Hampshire, U.S.A. Studied at Harvard Univ. and then entered journalism, serving on the *New York Tribune* in 1847. In 1849 he became its managing editor, and held that position until 1862, taking a strong line against slavery. On his resignation Secretary of War Stanton employed him on various important missions and made him an assistant secretary in 1864. In 1868 he became editor and part owner of the *New York Sun*. Of queer and fiery temperament, D. was savagely independent. He opposed the impeachment of President Johnson, he favoured Gen. Grant's election in 1868 and opposed him in 1872. He opposed Cleveland for the presidency in 1884 and supported him in 1888.

Dana, James Dwight (1813-95), celebrated naturalist, mineralogist, and geologist, b. Utica, New York; graduated at Yale, 1833. D. went as scientific observer on the U.S.A. exploring expedition under Wilkes (1838-42), visiting the Antarctic and Pacific. With his father-in-law, Silliman, he ed. *American Journal of Science*, 1846, and in 1850, on the resignation of Silliman, he was appointed Silliman prof. of natural hist. and geology at Yale. Among his works are *System of Mineralogy* (one of the most important books written on the subject), 1837; *On Zoophytes*, 1846; *Manual of Mineralogy*, 1848; *Reports on the Geology of the Pacific, 1849*; *On Crustacea*, 1852-4;

Textbook of Geology, 1864; *Coral and the Coral Islands*, 1873; and *Havarian Volcanoes*, 1890. See life by D. Gilman, 1899.

Dana, Richard Henry: 1. (1787-1879) Amer. poet and critic, b. Cambridge, Massachusetts. Educ. at Harvard, he studied law, but abandoned it for literature, and was one of the founders of the *North American Review*. In 1821 he started a periodical, *The Idle Man*, which lasted only 6 months. His first book of verse, *The Buccaneer*, 1827, was followed 6 years later by *Poems and Prose Writings*, and in 1839 he gave lectures on Shakespeare which were popular but were not printed.

2. (1815-82) Amer. author, lawyer, and politician, b. Cambridge, Massachusetts, son of the above. Educ. at Harvard, he was especially distinguished in maritime law, but on his eyesight giving way shipped as a common sailor, and gave his experiences in his sea classic, *Two Years before the Mast*, 1840. Other works were *The Seaman's Friend*, 1841, *Vacation Voyage to Cuba*, 1859; and an ed. of Wheaton's *Elements of International Law*, 1866. See C. F. Adams, R. H. Dana: a Biography, 1890.

Danaë, mythical daughter of Acrisius, king of Argos, great-grandson of Danaus. An oracle having foretold that her son would slay Acrisius, he imprisoned D. in a chamber of brass or stone. But Zeus visited her in a shower of gold, and made her the mother of Perseus. At his birth she was cast adrift with him on the sea in a chest, which eventually made land at the is. of Seriphos, where they were welcomed by the ruler, Polydectes. For the remainder of D.'s story see PERSEUS.

Danaides, the 50 legendary daughters of Danaus, who married the 50 sons of their uncle Aegyptus (q.v.). The 49 who murdered their husbands were condemned in Hades (according to some poets) to pour water everlastingly into sieves or bottomless vessels. See Aeschylus, *Suppliants*.

Danakil (singular Dankall), name now generally used for the many nomad and fisher tribes living on the coast of NE. Africa, from Massawa S. to Tajurrah Bay, and thence SW. to Shoa, in the arid region between Ethiopia and Obock. They are a Hamitic tribe of the Ethiopian branch, well built and slender, with features indicating intermixture of Arab blood. They claim to be Arabs and Moslems, but are really pagans, with a diabolical reputation as slavers. Nowadays they live on their own large flocks and herds of goats and cattle. They are extremely indifferent to the taking of human life, especially in regard to other clans. Victims who are killed by the D. are invariably mutilated, and gruesome relics from these victims are much prized. Their native name is Afar. For language see Isenberg, *Vocabulary*, 1840. See also Scaramucci and Giglioli, *Notizie sui Danachilli*, 1884.

Danaus, mythical son of Belus and grandson of Poseidon, joint-king of Egypt with his brother, Aegyptus. Jealous of

the power of the latter's 50 sons, or terrified by an oracle, he fled to Argos (home of his ancestress, Io), and became king there. He gave his 50 daughters (see DANAIDES) in marriage to his brother's sons, commanding them to kill their husbands on the wedding night (see AEGYPTUS). He was said to have reigned 50 years, and first taught the people to dig wells. D. was reputedly founder of Argos, and ancestor of the Danal.

Danbury: 1. Vil. of Essex, England, 4½ m. SE. of Chelmsford. Here is D. Park, one-time palace of the bishop of Rochester. Pop. 2900.

2. Co. seat of Fairfield co., Connecticut, U.S.A., situated on the R. Still. The most important industry is the manuf. of felt hats, which has been carried on since the 18th cent. D. also manufs. machinery, metal products, silverware, clothing, chemicals, aircraft, and rubber and paper products. It has been the site of D. Fair since the early 19th cent. Pop. 22,067.



E.N.A.
A DANAKIL SHEPHERD

Danby, Francis (1793-1861). Irish landscape and historical painter, b. Co. Wexford. He studied in Dublin and became drawing-master at Bristol between 1813 and 1825. He lived abroad, 1830 to 1842, but exhibited regularly at the Royal Academy. He was noted for imaginative subjects sometimes recalling the work of John Martin, examples being 'The Deluge' (Tate Gallery) and 'The Opening of the Sixth Seal' (National Gallery of Ireland).

Danby, Frank, pseudonym of Julia Frankau (1863-1916). Brit. novelist. She married Arthur Frankau in 1883. Her best novels are *Pigs in Clover*, 1903, *The Sphinx's Lawyer*, 1906, *The Heart of a Child*, 1908, *Let the Roof Fall in*, 1910, and *Joseph in Jeopardy*, 1912.

Dance, George, the Elder (?1700-68), architect to the city of London; designed the Mansion House (1737) and 3 London

churches: St Matthew, Bethnal Green; St Leonard, Shoreditch; and St Botolph, Aldgate.

Dance, George, the Younger (1741-1825), succeeded his father as architect to the city of London; rebuilt Newgate Prison (1770-83); designed St Luke's Hospital, Old Street (1782); and was prof. of architecture at the Royal Academy (1798-1805).

Dance, Sir Nathaniel (1748-1827), sailor, son of James D. (d. 1774), grandson of George D. the elder. He entered the E. India Company's service, 1759, commanding a ship, 1787. While commanding the E. India Company's homeward bound fleet (1804) he defeated a strong Fr. squadron of men-of-war off Pulo Aor, and reached St Helena safely. See Sir A. Markham, *Sea Fathers*, 1832; W. James, *Naval History of Great Britain*, iii. 1860; and F. Marryat, *Newton Forster*, 1865.

Dance-Holland, Sir Nathaniel (1735-1811), painter, son of George Dance the elder. Learned painting under Hayman, the genre-historical painter. Took up residence in Italy, where he came into contact with Angelica Kauffmann, of whom he was a devoted admirer. He produced a number of historical 'quasi-classic' paintings, such as 'Dido and Aeneas' (1763). He settled in London in 1768 and his name figures among the founders of the Royal Academy. In Greenwich Hospital is his portrait of Capt. Cook. Having made a large fortune he abandoned painting, became M.P. for E. Grinstead, and, after being created baronet (1800), changed his name to D.-H.

Dance of Death, name of a dramatic or pictorial allegorical representation of the universal power and supremacy of death over mankind, first presented as a church play (see MIRACLE PLAY and MORALITY), dating from about the 14th cent. It came to be most frequently represented with music and dancing, and all the adjuncts of a festival, to point the contrast all the more sharply. It is supposed that the 7 brothers of the Book of Maccabees (ii. 7) played an important part in a representation of the kind, or else the first representation, which took place at the monastery of the Innocents, Paris, fell upon their festival. Hence the origin of the name Chorea Machabaeorum, or Danse Macabre, by which it is frequently known. The dramatic form consisted of short dialogues between Death and about 24 followers, representing all ranks of mankind. In Spain it appeared as 'La Danza General de los Muertos.' The drama survived till about the 15th cent. In Germany the subject was very often treated. The representations on the cloister walls of the Klingenthal (Basel Convent) date from 1312. There is an example in one of the chapels of the Marienkirche at Lübeck, much resembling one at La Chaise-Dieu in Auvergne of 14th cent. date. In 1425 a series of pictures was painted on the walls of the monastery of the Innocents. A 'Triumph of Death' (wrongly ascribed to Andrea Orcagna) is in the Pisan Camp Santo, dating from the 15th cent. Similar frescoes were executed in

London after 1430. In Henry VI's reign there was one round the cloisters of Old St Paul's. The Tower of London, Croydon Archbishoppal Palace, Hungerford Chapel (Salisbury), Wortley Hall (Gloucestershire), and Hexham (Northumberland) also had examples. Holbein's 52 sketches for engravings are especially famous and original in design—the 'Imagines Mortis' (originals at Leninigrad). The first series was engraved by Lützelburger, 1520; the larger was pub. at Lyons, 1538, in book form. A modern representation is that of A. Rethel (q.v.). Rowlandson's *English Dance of Death*, 1815-16, is an Eng. adaptation. The subject has been treated in music by Saint-Saëns. See E. G. Peignot, *Recherches sur les danses des morts*, 1826; W. Seelmann, *Die Todten Tänze des Mittelalters*, 1893; A. Blackwood, *The Dance of Death, and other Tales*, 1927; P. Rous, *The Modern Dance of Death*, 1929; J. M. Clark, *The Dance of Death by Hans Holbein*, 1949; and *The Dance of Death in the Middle Ages and the Renaissance*, 1950.

Dancetté (from Lat. *dens*, tooth), one of the lines of partition in heraldry, differing from indented only in the greater width and depth of the indentations or notches. The fesse D. has only 3 indentations. They are arranged like the zigzag or chevron moulding, a common ornamentation in Saxon and early Norman architecture.

Dancing (see also BALLET), the oldest of the arts, derives from man's primitive need to give physical expression to strong emotion. When we are happy we jump for joy and shout or sing, frightened we tremble and scream, hurt we writhe and groan. Each of these motor impulses, which cannot altogether be repressed even in the most punctilious drawing room, is nearly always expressed in terms of voice and movement. This link between voice and movement is the beginning of the link between music and D.

Such sounds and movements, moreover, have a distinct quality. A jump and cry which express fear are quite different from a jump and cry which express joy. These distinctions, recognised from earliest times, soon came to be incorporated in religious, tribal, and patriotic ceremonies, like those of the aboriginal Australians, the most primitive of living peoples, which have been recorded for us on films. Here one may see how involuntary sounds and movements expressing particular emotions came to be re-created voluntarily for a special emotional purpose. The warrior going into battle enacts his own courage and the enemy's cowardice; the hunter depicts his stealth, whilst a member of the tribe, wearing the skin of the hunted, reacts as the hunters hope the quarry will react. Imitative actions of this kind, accompanied as always by appropriate sounds and performed collectively, could steel the will and steady the purpose of a tribe or family. They might propitiate friendly spirits, ward off evil ones, and dismay a foe. Always, however, there was the important result that by the collective performance of these

actions something of the emotion represented by the actions communicated itself to the performers. If this was so for them why should it not be true for the enemy? Why should not fear enter his soul? To our ancestors the magical powers of D. were not in question.

As time passed D. and singing, originally performed by the same individuals, began to separate. The dancer, unable because of his exertions to make all the appropriate noises, handed this function to others who sang for him or clapped to emphasise or accentuate the rhythm of his feet. From this developed by long and complicated processes the rhythms and music of the dance to-day. The purely functional purpose of song and dance began to be overlooked and D. ceased to be only communal. There began to be dancers and singers who were watched and heard for their individual excellence. Thus 2 kinds of D., the communal or social dance and the individual (ultimately theatrical or art) dance, began to develop in separate but parallel ways influenced by geographical, racial, environmental, cultural, and historical conditions. These conditions have led in India and much of the Orient to the creation of a dance idiom in which the hands and the upper body play a major role, the fingers being bent back and the head and neck moving laterally from side to side. By contrast, African and Pacific peoples centre their dance movement largely in the pelvic region; and European D. maintains a rigid spine whether the ground is vigorously stamped as in Sp. and, say, Hungarian national D. or touched softly as in ballet.

Everywhere, however, D., because of its origin deep in man's physical and emotional nature, has continued to reflect man's activities and condition. Throughout history and in our own times it has expressed his fears and hopes. Everywhere, for whatever purpose it is performed, it continually exercises its 'magical' power of communication. Thus in recorded religion it has been used for purposes comparable with those intended by our primitive ancestors when they first sought to appease the spirits. The Israelites 'danced before the Lord'; the dance featured in the temple processions of the Egyptians and was cultivated by the Greeks. Even Christianity, which never incorporated D. into any of its rites (rather looking upon it with suspicion), has always used it in ceremonies and religious feasts. To this day a ballet is danced every night before the high altar of Seville Cathedral during the Corpus Christi octave, and much of the Church recognises D. as a suitable form of public rejoicing on the great days of the Christian calendar. In similar ways and for similar reasons the war dances still in the tribal ritual of the Maori, African, and Amer. Indian peoples, the wedding dance in Hungary, the rigadoun in France, the maypole dances in England, and the polonaise in Poland all reflect the ancient purposes of D.

D. in our own time continues to be a response to an emotional need. For this

reason new dances of the communal kind usually spring from the least inhibited sections of society, to be taken up later and modified to suit more restrained tastes. The stately minuet began as a boisterous peasant dance. The waltz, which came from the peasants of Austria and Bavaria in the 18th cent., shocked the ballrooms of the early 19th cent. because the dancers stood face to face. To-day, rock 'n' roll imported from America and adopted particularly by working class youth was first condemned by 'respectable' society. It has now been introduced into our ballrooms in modified form, just as the turkey trot, the bunny hug, and the charleston were before it. Such constant change is characteristic of all D., but especially of the modern social dance which rapid world communications and mechanised entertainment subject to a multitude of foreign influences. The ballroom is thus the home of the folk dance of our international technological society.

The theatrical or art dance shows a similar development from similar origins. It arose to satisfy emotional needs and its steps and ideas are always being informed and rejuvenated by the 'popular' steps created for communal D. Trained dancers perform with special excellence what the ordinary dancer might himself have danced in origin centuries before. D. supplemented the religious and dramatic representations of the Greeks and was developed in one form by the Romans as serious and comic pantomime. This pantomime survived the barbarian invasions of Italy and the Dark Ages to reappear as mummings, masquerades, and interludes during the 14th and 15th cents.

In 1489, for example, a magnificent entertainment arranged at Tortona by Bergonzio di Botto to celebrate the marriage of Duke Galeazzo of Milan to Isabella of Aragon took the form of an interlude. Each dish at the banquet was accompanied by D., singing, and so on. The entertainment, however, was so original and became so famous throughout Europe that it marks a turning point in the evolution of a new art. Other courts copied it and developed its ideas. Within a century ballet had become a recognised entertainment in the courts of Europe quite different in quality from the mummings, the masquerades, and the interludes from which it sprang. Its form and new status were summed up in the *Ballet Comique de la Reine*, commanded in 1581 by Catherine de' Medici at the Fr. court to celebrate the betrothal of the Duc de Joyeuse to Marguerite of Lorraine. From this entertainment, which was written down and described in the first record of a ballet ever printed, ballet as an art form may be said to date. The fame of the *Ballet Comique* rang louder even than that of its predecessor at Tortona a hundred years before. It stimulated immensely the arts whose combination the art of ballet specially demands—poetry (for mood or story), painting (for design and costume), music, and D.

These early ballets, however, whilst

characteristically combining these arts (and singing, spoken lines, and much else besides), were mainly significant as the channel through which the ideas of the It. courts passed to France and took root so deeply that France became the home of ballet.

The art developed gradually under Henry IV (1589-1610) and Louis XIII (1610-43), then took an immense leap forward under Louis XIV (1643-1715), who combined a passion for D. with excellent taste and a sense of theatre. Under him the Académie Royale de Danse was estab. in 1661 and the Académie Royale de Musique in 1669. Ballet ceased to be an entertainment for the court alone; it passed into the realm of public entertainment and developed as opera ballet under the influence of the Eng. masques, another expression of the *Ballet Comique*, especially popular at the courts of James I and Charles I.

The estab. of a formal school of D. at the Académie Royale de Danse centred the new art in Paris. Henceforth its language, the description of its steps and so on, became (and still remain) French. All the early personalities of ballet were French—Beauchamps who first laid down the 5 positions of the feet, Camargo who introduced new steps and liberated women from the restrictions of the floor length skirt, Sallé who further liberated women from the restrictions of dress, and Jean Georges Noverre (1727-1810), creator of the *ballet d'action*, and author of *Lettres sur la danse et les ballets*, the first great text book of ballet.

From Noverre, who worked much outside France, we can trace the spread of the art to other countries. Noverre's pupil Dauberval was the teacher of 2 Italians, Salvatore Viganò, who estab. himself at Milan in 1812, and Carlo Blasis, who became director of the Imperial Academy of Dancing and Pantomime at La Scala, Milan, in 1837. These 2 remarkable men jointly laid the choreographic, technical, and pedagogical basis of ballet as we know it to-day, and a whole school of D. is directly descended from them. It was Giovanni Lepri, a pupil of Blasis, who taught Enrico Cecchetti, ballet master to Diaghilev (q.v.) and teacher of many Eng. dancers to-day.

The fame of Fr. ballet led to invitations from other caps. The Empress Anne of Russia estab. a state school of ballet in 1735 under the direction of Landé. This directorship, and indeed the direction of all the Imperial Ballet in Russia, remained under Fr. influence for nearly 2 centuries. Landé was succeeded in 1801 by Didelot, and he by other Frenchmen until in 1858 Marius Petipa from Marseilles was appointed *maître de ballet*. Petipa's rule, supported by Gustave Johansson, a Dan. teacher trained in the pure Fr. school, only ended with his death in 1910.

Similarly in Denmark a Frenchman, Pierre Laurent, founded the first regular school of D. at the court theatre. His successor Galeotti, though an Italian, had acquired a leaning towards the Fr. style before coming to Copenhagen, and his

successor Bournonville, a Dane who is the father of modern Dan. ballet, was also trained in France.

Russian and Dan. ballet are therefore rooted in the Fr. school and Dan. ballet has continued in this tradition almost up to our own time. Ballet in Russia, however, came under the influence of the It. school of Viganò and Blasis through the virtuosos dancers this school produced. Chief among them were Virginia Zucchi, Pierina Legnani, and Enrico Cecchetti, engaged as *premier danseur* and professor of D. at St Petersburg in 1887. From this It. school of training 20th cent. Russian dancers developed the impressive technique which was among the glories of the Russian Ballet brought to Paris in 1909.

The Russian Ballet with Vaslav Nijinsky, Anna Pavlova, and Tamara Karsavina (q.v.) among its early leading dancers revived ballet in Western Europe after the decline which had followed the great Romantic Period in Paris in the mid 19th cent. It was the memory of the best elements of this Romantic Period, but still more the liberating influence of an Amer. Isadora Duncan (q.v.), who visited Russia at the turn of the century, which animated the work of Diaghilev's prin. choreographer, Michel Fokine (q.v.). Fokine's ballets for the Diaghilev seasons in London and Paris before 1914 revolutionised the art of choreography. In place of artificial mime which told the story interspersed with conventional dance *disenfranchisements* he insisted that incident and emotion should be described through dance alone. Whether a ballet conveys a mood or depicts a drama, the marriage of dance, music, décor, and costumes should be able to convey the librettist's intention without recourse to artificial explanation. He demonstrated his views with *Les Sylphides* and *Petrouchka* and thus re-estab. much of the emotional impact upon the public which ballet had lost. He reminded ballet, however indirectly, of its primitive origins.

After his departure from the Diaghilev Company in 1914 Diaghilev developed a succession of brilliant choreographers and dancers until his death and the end of his company in 1929. The dancers and the choreographers, of course, lived on, settled in different countries, and founded companies of their own, built on his ideas and on the influence of Pavlova, whose D. had won the general public for the art. To this process Britain owes its Royal Ballet under Dame Ninette de Valois. France the personal rule of Serge Lifar at the Opéra, and America its New York City Ballet under George Balanchine. These companies in turn, together with the companies in Russia and Denmark, have produced dancers who have founded other companies in other countries. To-day ballet is growing as a national art throughout Europe, SE. Asia, Japan, S. America, and all the members of the Brit. Commonwealth. Its decisive centre, however, remains in Europe and European Russia.

Parallel with this development has gone the development of other techniques of

stage D., almost all of which owe something to the influence of Isadora Duncan's ideas of 'free dance,' D. which conveys emotion uninhibited by the demands of technique or formal steps. Those who came after her, however, realised the limitations of a style of D. which had no vocabulary and no system of training. They developed their own systems, systems of 'modern' dance which reflected a variety of influences from the folk traditions of Negro America derived from Africa to the movements of the modern proletariat in factory and field, oriental dance traditions, and the educational work of Jacques Dalcroze in music and movement. Some of these systems are so highly personal that they will perish with their inventors. Among the most influential have been Ruth St Denis, Ted Shawn, Hanya Holm, Doris Humphrey, Charles Weidman, and Martha Graham in America, and Rudolf von Laban, Mary Wigman, Kurt Jooss, and Sigurd Leider in Germany. Their methods and ideas, often combining with the ideas and techniques of ballet, have produced what is beginning to be known as 'the technological dance,' the stage dance which reflects the hopes and doubts of our technological society as faithfully as the hoppings and shufflings of primitive man reflected the hopes and doubts of his society. This D. is represented to-day in theatre, cinema, and television by the work of choreographers like Agnes de Mille, Eugene Loring, Fred Astaire, Gene Kelly, and Michael Kidd.

See also BALLET; COUNTRY DANCE; FANDANGO; FOLK DANCING; MASQUERADE; MAZURKA; MINUET; MORRIS DANCE; POLKA; POLONAISE; QUADRILLE; RIGADON; RUMBA; SALTERELLO; SARABAND; SCHOTTISCHE; SCHUMPLATTER; TANGO; WALTZ.

See Carlo Blasis, *The Code of Terpsichore*, 1830; Cyrill Beaumont, *A Short History of Ballet*, 1933, and other works by this author; Arnold Haskell, *Ballet*, 1937, and other works by this author; John Martin, *The Dance*, 1946; Mark Edward Perugini, *A Pageant of the Dance and Ballet*, 1946; V. Silvester, *The Magic Way to Ballroom Dancing*, 1947; Violet Alford (ed.), *Handbook of European National Dances*, 1948; Jean Georges Noverre, *Letters on Dancing and Ballet* (trans. Beaumont), 1951; Melusine Wood, *Historical Dances: 12th to 19th Century*, 1952; Keita Fodeba, *Les Hommes de la danse*, 1954; Mary Clarke, *The Sadler's Wells Ballet*, 1955.

Dancourt, Florent Carton (1661-1725), Fr. actor and dramatist, b. Fontainebleau of good family. He was educ. for the legal profession, but when he appeared at the Théâtre Français in 1685 his gift for comedy at once brought him success as an actor. One of his greatest successes was as Alceste in Molière's *Misanthrope*. He wrote over forty plays, many of which display his genius for depicting peasant characters. Among the best of his plays are *Le Chevalier à la mode*, 1687; *Les Bourgeoises de qualité*, 1700; *Le Galant Jardinier*, 1704. In his later years D. retired to his château in the country, and

devoted himself to writings of a religious character.

Dandelion, or *Taraxacum*, cosmopolitan genus of Compositae with hundreds of forms. *T. officinale* is the common D., *T. laevigatum*, the lesser D., and *T. paludosum* and *T. sputabile* are Marsh D.s. The name is derived from the Fr. *dent de lion*, or lion's tooth, on account of its jagged appearance.

Dandelion Wine, see WINES, HOME-MADE.

Dandie Dinmont Terrier, called after the character in Scott's *Guy Mannering*, who was founded on a Border farmer, Mr. Davidson of Hindlee, Teviotdale, who had helped to introduce the breed. There are two varieties, peppers and mustards, the former being slate-blue in colour, and the latter yellow. It is a strong muscular dog, a fearless fighter, and somewhat unmanageable. It has in it some bulldog blood. The muzzle is deep and the jaws very strong. The coat is moderately long, and the ears feathered to a point. Weight about 20 lb.



DANDIE DINMONT TERRIER

Dändliker, Karl (1849-1910), Swiss historian and professor at the univ. of Zürich. Among his works is *Geschichte der Schweiz*, 1883-8. With J. Müller he wrote *Lehrbuch der allgemeinen Geschichte*, 1891; and *Geschichte der Stadt und des Kantons Zürich*, 1908-12.

Dandolo, Enrico (c. 1120-1205), doge of Venice from 1192 to 1205. He belonged to a famous Venetian family, being its most distinguished member. Though about 72 when he was elected doge, he proved a vigorous and brave ruler. In 2 naval battles he successfully ended the war with Pisa; marched at the head of the Crusaders in 1201, and took Constantinople by storm in 1204. Enrico's eldest son, Fantino, was patriarch of Constantinople; and the second son, Rainieri, was procurator of S. Marco, and was killed in Candia (1213). There were 3 other doges of the D. family: Giovanni, 1280-89; Francesco, elected 1329-39; and Andrea, 1343-54, author of a chronicle of Venice pub. in the *Kerum Italicarum Scriptores* of Muratori and a close friend of Petrarch, some of whose letters to him are extant.

Dandurand, Raoul (1861-1942), Canadian barrister, b. Montreal; son of Oedipe D. Educ. Montreal College,

Laval Univ. (LL.B., 1882; LL.D., 1909), and McGill Univ. Called to Quebec Bar, 1883; K.C., 1898. Assistant attorney-general for Quebec Prov. Called to Senate by Lord Aberdeen, 1898. Speaker of Senate, 1905-9. P.C., 1909. Leader of Senate in govs. of Mr Mackenzie King of 1921 and 1928. President of Assembly of League of Nations, 1925. Wrote *Traité théorique et pratique de droit*, 1890.

Dandy Fever, see DENGUE.

Dandy-horse, see CYCLES AND CYCLING.
Danegeld, land-tax, originally levied by Ethelred II to buy off the Danes. It was thus levied in 991, 994, 1007, and 1012. It was also used as a method of taxation by Canute, and, after being abolished by Edward the Confessor, was revived by William the Conqueror, being levied for the last time in 1163.

Danelaw, **Danelagh**, or **Danelagu**, ter. in England which Alfred the Great ceded to Guthrum in 878, after the battle of Edington. It was largely reconquered by Edward the Elder, but in 940 Edmund I was forced to cede that part of the D. comprising the modern Lincs, Leics, Notts, and Derbyshire to Olaf Guthfrithson, Viking king of Dublin. Edred (q.v.) campaigned vigorously against attempts by the Norsemen to reassert their authority in the rest of the D., and when he d. (955) his rule was acknowledged throughout the region. The D. corresponded roughly to 15 of the modern Eng. cos. in the N. and E., from Northumberland in the N. to Essex in the S., Watling St. being the approximate W. boundary. Dan. customs and a modified Dan. law ran throughout the region, and it contained a large Scandinavian element in the pop., which soon intermarried with the A.-S. inhab. The Dan. element was obviously much stronger in some areas than in others, as can be determined from a detailed study of the place and personal names listed from NE. England and Norfolk and Lincs in Domesday Book.

Danes, name given to Scandinavian tribes, especially to the inhab. of Denmark. In the 5th cent. AD they replaced the Angles and Jutes. They are usually described as a yellow-haired, blue-eyed people of medium height. Tradition points to Zealand as the home of the D.; at a later stage the name D. was applied to all inhab. of Jutland and the is. The old Dan. language occurs in runic inscriptions, 700-1050, the Viking period. Three marked periods in their list. are the Viking period up to Canute (d. 1035), time of Valdemar I and II (1157-1227), and the 14th cent. See also DENMARK. See J. A. Danstrup, *History of Denmark*, 1948; and S. M. Toynce, *Scandinavians in History*, 1949.

Danes' Dyke, see FLAMBOROUGH HEAD.

Dangerfield, Thomas (c. 1650-85), conspirator, son of an Essex farmer. He became a thief, and later a false coiner and perjurer. He pretended to have discovered the so-called Meal-tub Plot against Charles II. He was convicted of perjury in 1685, and d. from a blow shortly afterwards.

Dangerous Trades. This term is used in

a somewhat technical sense, not including all D. T., but principally those in which some form of poison or disease is incidental to the trade itself, as now carried on. The designation is reserved not so much for trades in which sudden injury or death may result from machinery as for those in which the causes of danger and injury are slower acting. It cannot be applied to the poor sanitation and ventilation incidental to many trades. The Factory and Workshops Act, 1883, was the first real attempt to deal with the question. The Act of 1891 gave the Home Secretary power to make regulations for any industry (not domestic) certified to be dangerous to health. By 1898 the inspectors had won 49 out of 56 cases, and these trades were henceforward classed as dangerous. They include, among various others, manufs. of china, earthenware, white lead, lucifer matches, paint, and arsenic, dry cleaning, furrier's work, tanneries, use of grindstones, electric generating works, quarries, bottling, spinning, weaving, and working in compressed air, i.e. at a pressure higher than that of the atmosphere. Of industrial poisons lead and lead compounds are the most dangerous, and they concern about 130 trades, including smelting, painting, plumbing, printing, and the manuf. of earthenware. All chemical workers are liable to various affections, especially of the skin. Ulcers are common to those working in pitch and tar, and anthrax is known as the wool-sorters' disease. The coal-miner is subject to numerous accidents and sev. possibilities of danger, especially from gas-poisoning. Miners, stone-masons, and textile workers are subject to dust diseases of the lungs. Cotton is best operated in a humid atmosphere, and the temp. is apt to become dangerously high. Coughs and asthma, accompanied by fever, are sometimes caused by a mould fungus adhering to raw cotton. The Home Office have in Horseferry Road, Westminster, the Safety, Health, and Welfare Centre (Factory Dept) (open free to the public) devoted to the subject of D. T. In 1917 the U.S.A. made an inquiry into the cotton industry, finding the rate of disability for males was 37.7 per 1000 in May and June and for females 34.4, while in Nov. and Dec. the figures were 18.9 and 17.9 respectively. See Industrial Welfare Society, *Welfare in Industry and Health Service in Industry*, 1942; Dept of Health, Scotland, *Health and Industrial Efficiency*, 1943.

Daniel, Arnaud, see ARNAUT DANIEL.

Daniel, Père Gabriel (1649-1728), Fr. author and theologian; entered the Society of Jesus in 1667. Louis XIV gave him a pension and the title of historiographer of France. He wrote *Histoire de France*, 1713, of which many eds. and abridgments appeared (see Griffet's, 1750-60). Voltaire criticised it harshly. His *Entretiens de Cléandre et d'Eudoxe*, 1694, was an attempt to refute Pascal's *Lettres provinciales*. His *Histoire de la milice française* is well known (1721). D. attacked Descartes's views and doctrines. See C. Sommervogel, *Bibliothèque des*

écrivains de la compagnie de Jésus, II, 1669; P. L. Joly, *Eloges de quelques auteurs français*, 1742.

Daniel, Samuel (1562-1619), poet and dramatist, b. probably near Taunton, Somerset, son of a music master. He was educ. at Magdalen Hall, Oxford, but left without a degree. He then served as tutor in sev. noble families, his patrons including the Earl of Pembroke and Lord Mountjoy. In 1592 he pub. *Delia*, a fine sonnet sequence, and *The Complaint of Rosamond*. About the same time there is a reference to him in Spenser's works as a poet who has recently become known, and tradition asserts that he succeeded Spenser as Poet Laureate in 1599, the year in which he pub. *Musophilus, or A General Defence of Learning*. A weighty poem in 8 books, *The History of the Civil Wars between York and Lancaster*, had appeared in 1595. His *Defence of Rhyme*, pub. about 1602, championed the native Eng. use of rhyme, and was an answer to Campion's *Art of English Poesy*, which advocated classical metre. His plays include *Cleopatra*, 1594, a Senecan tragedy, but his chief work for the stage consisted of masques and pastorals designed for court functions, such as *The Vision of the Twelve Goddesses*, 1604, *The Queen's Arcadia*, 1605, and *Hymen's Triumph*, 1614. He entered the royal service and from 1615 to 1618 was Inspector of the Children of the Queen's Revels, finally retiring to a farm in Somerset. D. is said to have enjoyed the friendship of Marlowe and Shakespeare, and his poetry was praised by such acute critics as Drummond of Hawthornden, Coleridge, and Hazlitt. His complete works were ed. by A. B. Grosart, 1885-96. See W. Oldys, *Life of Daniel*, 1737.

Daniel, Book of, composed during the reign of Antiochus IV (about 165 BC) to strengthen the Jews under persecution during the attempt of Antiochus to substitute Gk religion for the worship of Yahweh. The period it describes is that of Nebuchadnezzar, king of Babylon, and the following kings. The book falls into two subject divs.: (1) chaps. i-vi, which tell how Daniel at the Babylonian court rises to high rank through his power of interpreting dreams; (2) chaps. vii-xii, containing four prophetic visions. Chaps. ii-ii. 4 are written in Hebrew, chaps. ii. 4-vii in Aramaic, the rest in Hebrew. The most probable explanation is that the original Hebrew was trans. into the vernacular Aramaic, and that the trans. was later used to supply missing parts in the original. The prophetic visions clearly refer to events of the reign of Antiochus Epiphanes, and the historical flaws show the date cannot be earlier. It is not however intended as history, but prophecy in a narrative and apocalyptic form. It is important for its influence on Jewish apocalyptic writings, for its revelation of the doctrine of a Resurrection, and for the vision of the Heavenly Son of Man which Christ applied to Himself. See commentaries by R. H. Charles, 1929, and S. R. Driver, 1921.

Daniell, John Frederic (1790-1845),

scientist, b. London. He invented the D. constant battery, a hygrometer in 1820, and a pyrometer in 1830. He was a fellow of the Royal Society (1813), Copley medallist (1836), and was prof. of chem. in King's College, London (1831-45). His writings include *Meteorological Essays*, 1823; and *Introduction to Chemical Philosophy*, 1839.

Daniell, Thomas (1749-1840), painter and illustrator, b. Chertsey, son of an innkeeper there. He was apprenticed to an heraldic painter, a dying trade. A leaning towards archaeology and botany revealed itself in paintings of topographical subjects and flower studies. He spent 10 years in India, publishing, on his return to England, his chief work, *Oriental Scenery* (6 vols.), 1795-1808. He executed many studies of oriental subjects, including temples and jungle scenes. His other illustrated works, executed in aquatint, include *Views of Calcutta*, *Views in Egypt*, and *Picturesque Voyage to China*. R.A. 1799, and fellow of the Royal Society about the same time.

Daniell, William (1760-1837), landscape-painter and engraver, nephew of Thomas D. with whom he went to India. D. entered the R.A. schools in 1799, becoming R.A. in 1822. He pub. *A Picturesque Voyage to India*, 1801-11; he engraved many of George Dance's portraits. His great work, *Voyage round Great Britain*, was completed between 1814 and 1825. Though his subjects were novel and interesting, his artistic merits were not exceptional. See Redgrave's *Dictionary of Artists*.

Daniell Cell. The D. C. consists of a zinc or amalgamated zinc electrode in dilute sulphuric acid or acidified zinc sulphate solution. It forms the negative pole. A copper electrode forms the positive pole and sometimes this is the outer vessel itself, the electrolyte being a concentrated solution of copper sulphate. The two solutions are separated by a porous pot of unglazed earthenware which allows ions to pass through but does not allow the solutions to mix. When the cell is connected to an external circuit, copper is deposited from solution on the copper electrode and the zinc dissolves in the acid. Hence the solution of copper sulphate decreases in strength whereas that of the zinc ions becomes more concentrated. The e.m.f. is approximately 1.1 volts.

Daniels, Josephus (1862-1948), Amer. editor, politician, and diplomat; b. Washington, N. Carolina, and educ. at Wilson (N. Carolina) Collegiate Institute. He became a prominent local newspaper editor and owner. He entered the Cabinet as the nominee of W. J. Bryan, his close friend, whose election publicity campaign he had directed—as he did for Woodrow Wilson in 1912. Like Bryan's, his outlook was narrowed by his strict views on religion, liquor, and pacifism. It was therefore somewhat anomalous that he was destined to put the Amer. Navy—he was secretary of the navy under Wilson, 1913-21—on an equal footing with that of China as the largest in the world. When the Democratic party

returned to power in 1933 under Franklin Roosevelt, his former assistant at the Navy dept. D. was appointed ambas. to Mexico, holding the post during Roosevelt's second term. Pubs. include *Our Navy at War*, 1922; *Life of Woodrow Wilson*, 1924; *Tar Heel Editor*, 1939; *Editor in Politics*, 1941; and *The Wilson Era*, 1944-6.

Danielson, Mrs J. S., see HURST, FANNIE.

Danilevskiy, Nikolay Yakovlevich (1822-85), Russian scientist and thinker, anti-Darwinist. He was the first to develop (in *Russia and Europe*, 1871) a philosophy of hist. as a series of distinct civilisations; this was later built upon by Spengler, Alfred Weber, and Toynbee. As a publicist D. was an exponent of extreme Pan-slavism.

Danilo, Petrović Njegoš (1677-1735), ancestor of the dynasty of Petrović-Njegoš, first hereditary prince-bishop (*vladika*) of Montenegro (1697-1735). He ordered the massacre of all Montenegrins who were Moslems or partisans of the Porte (1702), and carried on continuous wars with the Turks.

Danilo I, Petrović Njegoš (1826-60), prince of Montenegro (1851-60), succeeding his uncle (Vladika Peter II). He belonged to the family from which the prince-bishops of Montenegro had been chosen since 1697. D. was educ. at Vienna. He declared the line of hereditary prince-bishops at an end on his accession, and began ruling as a secular prince. Fierce war was waged with the Turks from 1852 until, after their defeat at Grahovo (1858), D. obtained the nomination of a European commission to mark a definite boundary between Turkey and the principality. He did much to improve the laws and social condition of his people. He was assassinated in 1860.

Danish Architecture, see SCANDINAVIAN ARCHITECTURE.

Dankara, dist. of W. Africa, situated in Ghana, with some gold mines.

Dannat, William T. (1853-1929), Amer. artist, b. New York. He studied at the Royal Academy, Munich, and was later a pupil of Munkacsy at Paris; he is especially noted as a figure- and portrait-painter. His 'Castanet Dance, a Quartette,' 1884, is now in the Metropolitan Museum, New York.

Dannay, Frederic, see QUEEN, ELLERY.

Dannebrog, the Dan. national flag, see FLAG.

Dannebrog, Order of, see ORDERS OF KNIGHTHOOD (DENMARK) (2).

Dannecker, Johann Heinrich von (1758-1841), Ger. sculptor, who became prof. of sculpture at Stuttgart. He executed busts of Schiller, Gluck, Lavater, Metternich, and other notable personalities. His 'Ariadne on the Panther' and his 'Christ' at Leningrad are among his finest work.

Dannemora, tn. of Sweden in the prov. of Upsala. It is the centre of the most important iron field of the country, and the best iron in Sweden is obtained here.

Dannevirke, anc. line of defensive earth-works in Slesvig, built originally by the

Danes under Godfred in the time of Charlemagne (AD 808), N. of the Eider, extending for 10 m. from the Sli to the Trene. It was enlarged in the 10th cent. Later it fell into ruins, but was repaired in the 19th cent. and pulled down by the Prussians after their victory over Denmark in 1864. Its remains, however, have been rich in archaeological finds.

D'Annunzio, see ANNUNZIO.

Dante Alighieri (1265-1321), It. poet, b. Florence, probably in the latter part of May 1265, some nine months before the battle of Benevento. His father, Messer Alighiero di Bellincione de Alighiero, came of an ancient and honourable family of that section of the city named from the Porta San Piero. In *Inferno*, x, 46-50, D. tells us that his family were strenuous adherents of the Guelph cause, and since the Guelphs were almost all in exile until 1266, it is rather difficult to account for his having been b. at Florence. Probably, however, his father, who seems to have been a notary, was of too little importance to be molested. Some few references to his relations are found in the *Divina Commedia*, and these may be briefly mentioned. In the heaven of Mars, among the warriors of the cross, D. meets his great-great-grandfather, Cacciaguida, who other sources tell us to have been b. about 1090, to have married Aldighiera degli Aldighieri, to have been knighted by Conrad III, and to have d. in battle against the infidel. His son, the first to bear the name of Aldighiero or Alighiero, is said by Cacciaguida to be still in the purgatorial terrace of the proud (*Paradiso*, xv, 91-96). The only other member of the family mentioned is Geri del Bello, a grandson of the elder Alighiero and cousin of D.'s father, a sower of discord and a murderer (*Inferno*, xxix, 13-36), whose violent and well-deserved death had not yet been avenged. D.'s mother, Donna Bella, d. soon after his birth, so a certain loneliness marked his life from the beginning. His father married again, Lapa di Chiarissimo Cialuffi, the daughter of a prominent Guelph citizen, and by this second marriage he had a son Francesco, and two daughters, one of unknown name, the other Tana. He himself d. while D. was still in childhood. There is a possible reference to one of D.'s step-sisters in the sonnet, 'A very pitiful lady, very young, in the *Vita Nuova*. The most salient feature of the poet's youth and early manhood is certainly the story of his love of the mystic Beatrice. The whole story is told in the *Vita Nuova* in an allegorical and poetical manner, and to this work reference must be made. Beatrice has generally been identified with Beatrice, the daughter of Folco Portinari, a wealthy Florentine. This Beatrice Portinari married Simone dei Bardi, a rich and noble banker. It is probable that D. did not declare his love, and that they did not meet many times. There are still some, however, who hold that Beatrice was no real woman, but a mystically exalted ideal of womanhood. In the *Vita Nuova* D. tells us that already at the age of 18 he had learnt 'the art of saying words in

rhyme,' but he shows no originality before his sonnet written to Beatrice ('To every heart which the sweet pain doth move'). He was immediately recognised (1283) as a new poet, and received many answers to this sonnet, including one from the most famous It. lyrist of the day, Guido Cavalcanti, henceforth to be the first of his friends. Boccaccio tells us that from 1283 to 1289 D. was engaged in study, but there is nothing to mark the outward course of his life. The lyrics of the *Vita Nuova* bear witness to his growing maturity in art, while the prose narrative shows his acquaintance with the Lat. writers. Boccaccio and Benvenuto da Imola also speak of a visit of D. to the univs. of Bologna and Padua, which can hardly have been so early. He was more certainly engaged in the military campaigns of 1288 and 1289, for Leonardo Bruni tells us that he took a prominent



DANTE ALIGHIERI

Engraving from a painting by Tofanelli.

part in the battle of Campaldino (11 June). This was the crowning triumph of Florentine arms, and the city was given up to great rejoicing. But on 9 or 19 June Beatrice d. and D. lifts up his voice in direct lamentation. It is not easy to get a definite idea of D.'s life during the ten years which followed this event. He seems to have taken refuge in philosophic studies. The poignant reproaches which Beatrice addresses to him when he meets her on Lethe's banks seem to tell us of a serious falling away at this period. Some moral aberration and sensual passion must have called him for a while from the light of reason and the beauty of righteousness. *Tanto giù cadde*, 'so low he fell' (*Purgatorio*, xxx, 136). He became friendly with Corso di Simone Conati, a turbulent and ambitious citizen, and with his brother Forese, a sensual man of pleasure. In sev. sonnets Guido Cavalcanti rebukes his friend for his altered mode of life, while some of D.'s own sonnets seem to

show that sev. women crossed his path. Some time before 1297 D. married Gemma di Manetto Donati, a distant kinswoman of Corso and Forese, and the marriage does not seem to have been entirely happy. Gemma bore him 4 children, Jacopo, Pietro, Antonia, and Beatrice, but she did not share his exile, and was still living in 1332. Upon the abdication of Celestine V in 1294 Boniface VIII was made Pope, an event ominous for Florence. In 1295, the first year of Boniface's pontificate, D. entered the troublous seas of political life. On 23 Jan. 1296 the Pope inaugurated his aggressive policy towards the Florentine republic by a bull denouncing Giano della Bella, a great leader of the popular party, overthrown in 1295, and extolling the prudence of the Florentines in expelling him. Now, although D.'s influence on the policy of the republic has been exaggerated by many, there can be no doubt that from the outset he took a decided attitude in direct opposition to all lawlessness, such as the riot which had overthrown Giano della Bella, and that he opposed any external interference in Florentine affairs whether from Rome, Naples, or France. In 1300 a new div. devastated Florence, originating in the feud between the two distinguished families of the Donati and the Cherchi. The partisans of the former house, consisting mostly of aristocrats and admired by the populace, are known as the Black Guelphs or Nerl, while the Cherchi, all-powerful among the burghers, headed the White Guelphs or Bianchi. On 1 May 1300 the two parties came to blows, and the whole city was divided. From 15 June to 15 Aug. D. was one of the 6 elected priors, and from this period he dates all his woes. The leaders of both parties were at first banished, but the Bianchi, who submitted quietly, were soon recalled. The exiled Corso Donati sought the Pope, whose aggressions had still continued, and that pontiff summoned Charles of Valois to his support. On 1 Nov., after giving solemn pledges to the Signoria, Charles entered Florence with 1200 horsemen, receiving no opposition. His first act was to recall Corso Donati and his allies, and the Bianchi made no attempt to hold their own. Plunder, massacre, and proscription was the order of the day. In Jan. 1302 D. and four other prominent men were accused of a variety of crimes, all of which the poet denies, and were exiled, their property being confiscated. All his early biographers support his denial. The terms of this decree of exile seem to imply that D. had fled from the city some time before its pub. He himself in the *Convivio* thus sums up the earlier portion of his exile: 'Since it was the pleasure of the citizens of the most beautiful and most famous daughter of Rome, Florence, to cast me forth from her most sweet bosom (in which I was born and nourished up to the summit of my life, and in which, with her goodwill, I desire with all my heart to rest my weary soul and to end the time given me), I have gone through almost all the parts to which this language extends, a pilgrim, almost a beggar, showing

against my will the wound of fortune, which is wont unjustly to be oftentimes reputed to the wounded.' We do not know exactly where he went. It may have been either Bologna, Siena, or Verona. In 1303 he was certainly at the latter town, where he found his first refuge at the house of Bartolomeo della Scala. Meanwhile, after several attempts to regain the supremacy, often in alliance with the Ghibellines, the Bianchi party were utterly defeated at Lastra (July 1304). About this time D., who had taken no active steps in the attack on Florence, went to the Studio at Bologna, and between 1307 and 1309 went on to Paris, where he achieved much repute in the schools. Here he probably remained until 1310, when tremendous events put an end to his studies and imperatively summoned him back to Italy. In 1309, after the death of Albert of Austria, who had totally neglected Italy, Henry of Luxemburg was elected emperor with the approval of the Pope. He immediately asserted his position as true king of the Romans and successor of Caesar, and moved S. to join all Italy together under a united church and empire. D., before the end of March 1311, had paid his homage to the new emperor, and had already written the first of a series of letters to the Ita. and Florentines in which he calls on them to submit to the absolute authority of Henry. But Florence was the most perverse of the great cities. She supported all who were opposing the emperor, treated his messengers with contumely, and formed a Guelf alliance against him with King Robert of Naples as her chief ally. D. urged the emperor against Florence (the sick sheep that infects all the flock of the Lord with her contagion), and the probable result of this and other letters was that a new condemnation was pronounced against him in Sept. 1311, making his exile perpetual. For a while Henry besieged Florence, but he had to retreat before the end of 1311, and 2 years later he died when about to renew the attack. And all hope being gone, the poet remained silent. From the spring of 1311 till the end of his days at Ravenna, which may be termed the last period of his exile, D.'s movements are hardly known at all, except by more or less certain conjecture. He had now given up all hope of returning to Florence, and wandered about in great poverty, under the protection of various lords, in different parts of Lombardy, Tuscany, and Romagna. There is a tradition, founded on *Paradiso*, xxi, 106-120, that he retired to the convent of Santa Croce di Ponte Avellana in the Apennines, engaged on the great *Commedia*. He seems at one time to have visited Lucca, and in 1316 an amnesty was offered to him with many other exiles, but on conditions too degrading for him to accept. Towards the end of 1316 he went to Verona to renew his friendship with Can Grande, son of Bartolomeo della Scala, and in 1317 he finally settled at Ravenna. Here ensued a quiet period, for he was treated with honour and

surrounded by congenial companions. Then in 1321 he was sent on an embassy to Venice to settle a quarrel which had arisen between the two cities. He returned sick with fever, and passed away on 14 Sept., the Feast of the Exaltation of the Holy Cross, 1321.

Dante's Works.—Before dealing in detail with the more important of the works, it will be as well to give a general account of his entire production. His works fall into 3 distinct periods. The first is the period of the new life, the epoch of the worship of the real Beatrice, in which the youthful poet beheld many things by his intellect, 'as it were dreaming.' This period includes the *Vita Nuova* with its lyrics, and closes with the promise to write yet more concerning her than has been written before of any woman. The second period is that of passion, political turmoil, and philosophical research, and marks a great advance in almost every direction. It includes the greater part of the *Canzoniere* collection, the 2 unfinished prose treatises—the *Convivio* and the *De Vulgari Eloquentia*—and the political letters connected with Henry VII. The Lat. treatise, *De Monarchia*, may also belong here. It may be observed here that the ideals of the empire of the Ger. Caesars, the papacy, Venice, Spain, and Bourbon France (that is, those empires which preceded the modern Brit. Empire) are completely enshrined in the *De Monarchia*, a work which knits itself closely to Caesarian and to consular Rome. Connecting the second and third periods comes the letter to the It. cardinals on the death of Clement V (1314). The last period is that of the *Divina Commedia*, the return to Beatrice, but now the allegorical Beatrice, as well as the two eclogues and the letters to the Florentine friend and to Can Grande, if these are authentic. Among apocryphal works may be mentioned the *Questio de Aqua et Terra*, in Lat. prose, and the *Seven Penitential Psalms* and the *Profession of Faith* in It. verse. Sev. of his smaller poems, to which he incidentally makes reference in other works, are now lost.

D. acknowledges Guido Guinicelli as his master in poetic art and the founder of the new school of It. poetry (*Purgatorio*, xxvi, 97), whose doctrine of love expounded in the 'Canzone of the Gentle Heart' is the most fitting introduction to the *Vita Nuova* and the *Canzoniere*. The *Vita Nuova* may be considered as a preparation for the *Commedia*, inasmuch as it tells us how the divine singer became a poet, and how she crossed his path who was to be his spiritual pilot over that mighty ocean. It is the most spiritual and ethereal romance of love that exists, but its purity is such that it comes not from innocent simplicity of soul, but from self-repression. It tells the whole story of D.'s love for Beatrice from his first sight of her in their ninth year to a vision which is the anticipation of her final apotheosis. Under the heading of the *Canzoniere* are included all D.'s lyrical poems, together with a few that are more doubtfully attributed to him. They fall

into 4 groups: the first of the *Vita Nuova* period; the second in which allegory is beginning to supplant the real Beatrice; the third expressing passionate love of the other real women; the fourth, canzoni on Rectitude, Nobility, and Gallantry. Just as, after the death of Beatrice, D. collected all his early lyrics in a prose narrative, so in the *Convivium*, or Banquet, he attempts to collect fourteen of his later canzoni, with a prose commentary to the glory of his mystical lady, Philosophy. The work, however, was left incomplete. The first of the Lat. works is the *De Monarchia*, an attempt to solve the burning medieval question of the relations of Church and State, of spiritual and temporal authority. It is divided into three books, and has been described as 'the most purely ideal of political works ever written.' The *De Vulgari Eloquentia* is incomplete, only two out of the four books having been written, the second remaining unfinished. It deals first with the search for the highest form of the vernacular, and secondly, with the application of the vulgar tongue to poetry. Ten Lat. letters are also extant and ascribed to the divine poet, but only that to Henry VII, emperor of Germany, is universally accepted as genuine. One of them, that to Can Grande, is a miniature philosophic treatise in epistolary form, at the same time being a dedication of the *Paradiso* to the young lord of Verona. It is probably authentic, and its date would be about 1319. The eclogues, two delightful pastoral poems in Lat. hexameters, belong to the closing period of D.'s life, when he was engaged on the *Paradiso*. In spite of the testimony of Boccaccio and Leonardo Bruni, their authenticity has been questioned.

Though the *Divina Commedia* must be regarded as the work of his closing years, it is poetically placed in the spring of 1300, before D.'s election to the priorate, and the poet puts himself in the position of a man relating a vision which he had seen 20 years before. Hence all events subsequent to April 1300, such as the faction fight of May in that year, are spoken of prophetically as future events. Approximately the completion of the *Inferno* and *Purgatorio* may be placed between 1314 and 1319, that of the *Paradiso* between 1316 and the day of his death. The poem is a vision of the world beyond the grave, and also an allegory, based upon that vision, of the life and destiny of man, his need of light and guidance, his duties to the temporal and spiritual powers, to the empire and to the Church. In the epistle to Can Grande, the poet tells us that the allegorical meaning is 'Man as by freedom of will, meriting and demeriting, he is subject to justice rewarding or punishing.' The *Inferno* represents the state of ignorance and vice; the *Purgatorio* is the life of converted sinners, obeying Caesar and reconciled to Caesar, doing penance and striving Godwards, after the state of innocence has been regained in the earthly paradise; the *Paradiso* represents the ideal life of action and contemplation, closing in an earthly

foretaste of the Beatific Vision. This may be applied to the moral or spiritual Hell, Purgatory, Paradise of men still united to their bodies in this life, as well as to the essential Hell, Purgatory, Paradise of disembodied spirits. The end of the poem, as the epistle to Can Grande shows, is to remove those living in this life from the state of misery and lead them to the state of felicity. In the individual, this object is attained in the manner described above, in the universality it can only be effected by the restoration of the empire and the purification of the Church. To aid in the attainment of this end D. has two guides: Virgil, representing Reason or Human Wisdom, and Beatrice, representing Revelation or Divine Wisdom. At times Virgil seems invested with the power of the empire, and Beatrice with the authority of the Church. The personal meaning, too, must not be forgotten. The allegory is partly dropped when Virgil leaves Dante in the Earthly Paradise to return to his own sad place in Limbo, and entirely when Beatrice is last seen enthroned in glory beneath Madonna's throne. The metrical structure is complicated. Each of the three Canticas is divided into cantos, the *Inferno* into 34, the *Purgatorio* into 33, the *Paradiso* into 33, thus making up 100 cantos, the square of the perfect number. Each canto is composed of from 38 to 53 *terzine* or *terzette*, written in *terza rima*, thus ABA, BCB, CDC, . . . with an extreme line or *ternello* rhyming with the second line of the last *terzina* to close the canto thus . . . XYZ, YXYX. The *Divine Comedy* is issued in the Temple Classics in 3 vols. with It. and Eng. on opposite sides. Rossetti's trans. of the *Vita Nuova*, with the sonnets of D. and his contemporaries, is to be found in Everyman's Library. The best ed. of the works is the Oxford *Dante* (1894, 1924), ed. by E. Moore. See P. Toynbee, *Dante Alighieri, his Life and Works*, 1893; F. X. Kraus, *Dante, sein Leben und seine Werke*, 1897; E. Moore, *Studies in Dante*, 1896-1917; L. T. Holbrook, *Portraits of Dante*, 1911; E. Gardiner, *Dante* (Temple Primers), and *Dante and the Mystics*, 1912; B. Croce, *La Poesia di Dante*, 1921; E. Gilson, *Dante the Philosopher*, 1948; J. H. Whitfield, *Dante and Virgil*, 1949; U. Cosmo, *Handbook to Dante Studies*, 1950; lives by H. Hauvette, 1930; N. Zingarelli, 1931; and M. Barbi, 1933. See also periodicals devoted to Dante: *Studi danteschi*, and *Deutsches Dante-Jahrbuch*.

Dante da Majano, It. lyrical poet b. at the end of the 13th cent., contemporary of Dante Alighieri. He was a slavish imitator of the troubadours, two of his poems being in Provencal. He had a considerable reputation, but little is known of his life. His reply to Dante's first sonnet (*A ciascun' alma presa*) was very coarse. A collection of his works, entitled *Sonetti e Canzoni di diversi antichi autori toscani*, appeared 1727. A later ed. is that of Bertacchi (1896). Novati (1883) refuted Bolognioni's arguments against the existence of such a poet.

Danton, Georges Jacques (1759-94), Fr. revolutionary, b. Arcis-sur-Aube, of well-

to-do parents. In 1780 he went to Paris, where he practised as an advocate until the outbreak of the Revolution. He took no prominent part in the earlier stages of the Revolution. He first came to notice as founder and president of the Cordeliers' Club, which, though local in origin, soon began to attract the more extreme revolutionaries. D. apparently took no prominent part in the events of 1789—the fall of the Bastille and the forcible removal of the court from Versailles to the Tuileries. In 1790 he was made commander of the battalion of the National Guard in his dist. In 1791 the death of Mirabeau (who had fully appreciated D.'s talents) hastened the downfall of the monarchy. From a minor administrative office, D. was, in 1792, made minister of justice, and from then until his death is one of the leading figures in the hist. of the period. He had no part in the Sept. massacres, but he sought to justify them as inevitable excesses. It was his eloquence that inspired his countrymen to



GEORGES JACQUES DANTON

drive back the Prussians when they sought to restore the monarchy. 'We must dare,' he said, in words that became proverbial, 'and again dare, and for ever dare.' He voted for the death of the king in 1793. He was one of the original members of the Committee of Public Safety, and was frequently sent on special missions. In the convention he became leader of the Mountain, a party so named from the high benches on which its members sat. Under his leadership they overcame the more moderate Girondins, or country party, but when D. decided that it was time to end the Terror and return to the normal processes of civil law, he found he could not control the blood-lust of the party he had led to victory. His enemies persuaded Robespierre that D.'s death would not only be in the public interest, but would also be popular, and D., either careless or disdainful of his enemies, was arrested without difficulty. On 2 April 1794 he was brought before the revolutionary tribunal which he had created a year before, and sentenced to death without

further hearing. He was executed on 5 April 1794 with 14 others, including Camille Desmoulins, his comrade from the early days of the Cordeliers' Club. He was an outstanding orator, and, in spite of his violence and lack of logical policy, is one of the more human and attractive of the revolutionary leaders. See A. Bougeart, *Danton, documents authentiques*, 1861; and lives by A. H. Beesly, 1899; H. Belloc, 1899; L. Modellin, 1914 (trans. 1921), and H. Wendel, 1936.

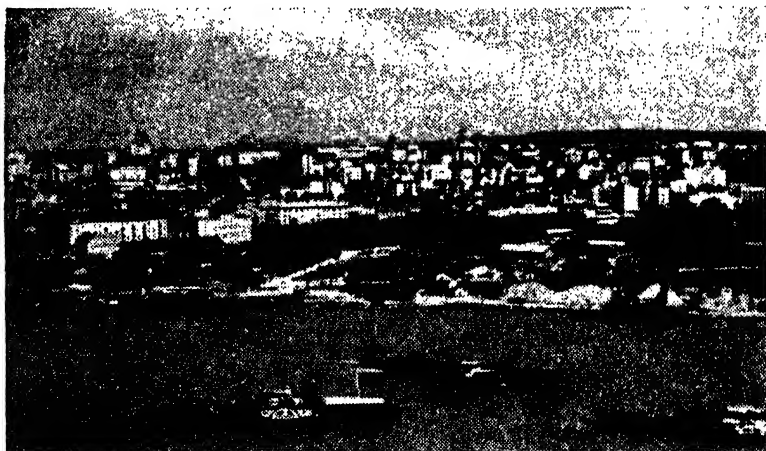
Dantzic, see GDAŃSK.

Danube (Gk *Isavros*; Ger. *Donau*; Czech. *Dunaj*; Hungarian *Duna*; Serbian *Dunav*; Rumanian *Dunărea*), second largest riv. of Europe, its length of 1740 m. being exceeded only by that of the Volga. It has its origin in two mt. streams, the Brigach and the Breg, which rise in the Black Forest (q.v.) and which unite at Donaueschingen, 2224 ft above sea-level. The riv. then flows NE. through Baden-Württemberg and Bavaria (q.v.), past Ulm (at which point it becomes navigable for cargo-boats) and Ingolstadt, and is joined by the Altmühl (which is connected by canal with the Regnitz, and hence with the Main and Rhine, qq.v.). At Regensburg the D. is joined by the Regen, and turns SE. to Passau, where it receives the waters of the Inn (q.v.). Flowing from here into Austria, it passes Linz and Vienna, between the Little Carpathians (q.v.) and the Leitha mts., and leaves Austria by the mt. gap called the 'Carpathian Gate.' After a short course through Czechoslovakia, passing Bratislava, it enters Hungary. The riv. here forms alluvial is. (the Great and Little Schütt) before turning S. to Budapest, where it again forms is. (e.g. Csepel is., q.v.). After skirting the Alföld (q.v.) the D. enters Yugoslavia, where it is joined by the Drava and Tisza (qq.v.) and, at Belgrade, by the Sava (q.v.). Shortly after receiving the waters of the Morava it forms, for some distance, the boundary between Yugoslavia and Rumania. A series of rapids occurs on this stretch of the riv., the most important being at the Iron Gates (q.v.). Broadening as it reaches the marshy plains, the D. then follows the boundary between Rumania and Bulgaria, draining the country lying between the Transylvanian Alps and the Balkans. From flowing E. it gradually turns NE. and N., skirting the Dobruja (q.v.), and then, after passing Brăila and Galati, it turns sharply E. It is joined here by the Prut (q.v.), and shortly afterwards begins to form its delta, reaching the Black Sea through 3 main mouths. The extreme mouths are 60 m. apart, and the area between them, comprising some 1000 sq. m., is little more than a wilderness of rushes. The area drained by the riv. in the whole of its course is estimated at over 315,000 sq. m. The D. is distinctive among important European rivs. in that it flows from W. to E. It has roughly about 400 tribs., of which about 1 in 4 is navigable. The width of the riv. varies considerably, and at some points the opposite shore is hardly discernible.

Danubian International Regulation. A European commission of the D., with H.Q. at Galatz, was appointed by the treaty of Paris, 1856, after the Crimean war. Its function was to control the navigation of the riv. from Braila to Sulina (at the mouth). Up to the First World War the whole riv. was under its control, but the war conditions of 1914-19 suspended the validity of agreements between European nations. The later International D. Commission, with H.Q. in Belgrade, was created by the treaty of Versailles by a convention instituting the definitive status of the D. signed in Paris (23 July 1921) by all the chief nations of Europe with riparian rights or commercial interests, the convention coming into force on 1 Oct. 1922; and in the following year a 2nd con-

war. For Russia the delta of the D. has always entered into the question of the Black Sea and the Straits. More recently Russia has been concerned, not only with the delta and oversea trade, but also with the upper reaches and trade up and down the riv.

Following the Ger. invasion of Russia in 1941 the whole D. was controlled by Germany for the next 3 years. At the Paris conference of foreign ministers in 1946 Bevin, representing Britain, said he would accept Byrnes's (U.S.A.) proposal that a clause in the peace treaties should stipulate that navigation should be free and on equal terms for all states, 'providing it is also agreed that a Danubian conference can be called within a fixed period after the conclusion of the treaties,' thereby following the precedent of the



THE RIVER DANUBE AT BELGRADE

Yugoslav Embassy

vention was signed (27 May) by riparian powers approving arrangements regarding a permanent technical commission for the D. The convention of 1921 provided that the navigation of the D. should be equally free to all nations from the Black Sea to Ulm and instituted schemes for the improvement of the waterway; it decided that no passenger or goods traffic should receive any preferential treatment in any state. A pilotage and riv.-improvement service was maintained by the commission at the Iron Gates (H.Q. at Orsova), the expenses being met by shipping dues. Receipts of this commission in 1937 totalled 3,500,000 gold francs, and expenses 2,200,000. Much hist. therefore lies behind current discussion of the control of the D. Russia is traditionally hostile to international control of the riv., which, as shown above, originated after her defeat in the Crimean

previous world war when an inter-allied D. commission under Adm. Sir E. Troubridge, which had replaced the D. command, was itself superseded in 1920 by the International Commission. This conference was held in Aug. 1948 at Belgrade, and resulted in the adoption by the conference of a new Soviet-sponsored convention which, while reaffirming in theory the principles of freedom and equality of access for all nations, would limit the membership of the new commission to riparian states (among them the R.S.F.S.R. and Ukraine), conditions of traffic to be controlled by the Soviet-Danubian naval companies. The delegates of the W. powers maintained, however, that the whole new statute was *ultra vires* as the acquired rights of France and Britain could not be abrogated without their consent. For battles on the D. in the Second World War see under EASTERN

FRONT, or RUSSO-GERMAN CAMPAIGNS IN SECOND WORLD WAR, and also BUDAPEST, VIENNA, etc. See C. A. Macartney, *Problems of the Danube Basin*, 1942; and F. Hertz, *The Economic Problems of the Danubian States*, 1947.

Danubian Principalities (Provinces), name formerly given to the principalities of Moldavia and Wallachia. In political discussions it was also sometimes used for Serbia and Bulgaria.

Danum, see DONCASTER.

D'Anville, Jean Baptiste Bourguignon (1697-1782), famous Fr. geographer and map-maker of Paris. He was recognised internationally as the leading geographer, and in 1710 was appointed geographer to the king. He occupied the chair of geography in the Academy of Sciences, 1773. D'A. pub. 211 maps, the chief collections being *Atlas Général*, 1737-80; *Atlas Antiquus Major*; *Orbis Romanus*; *Orbis Veteribus notus*; *Géographie ancienne abrégée*, 3 vols., 1769; and *États formés en Europe*, 1771. See Condorcet, *Éloge de D'Anville*, 1782.

Danville: 1. City, cap. of Vermilion co., Illinois, U.S.A., 123 m. S. of Chicago, on Vermilion R., in an agric. and coal-mining area. There are railway shops and brick and zinc plants. D. manufs. food products, foundry products, machinery, paper boxes, etc. Pop. 37,900.

2. City of Virginia, U.S.A., on Dan R., 55 m. S. of Lynchburg. It is the site of two junior colleges for girls and a boys' school. It is in the yellow-tobacco region, and has a large tobacco trade, cotton mills, and manufs. clothing, furniture, fertilisers, elevators, foundry and lumber products, packed meats, and beverages. Pop. 35,065.

Danzig, see GDAŃSK.

Daphne, a nymph, daughter of the Thessalian river-god Peneus. She fled from her lover, Apollo, and was changed into a laurel tree, which was ever afterwards sacred to Apollo. See Ovid, *Metam.* l. 425-567. Pansausias (viii. 20) and Parthenius (*Erotica*, xv) tell of her pursuit by another lover, Leucippus.

Daphne, famous grove and sanctuary of Apollo, about 5 m. SW. of Antioch, Syria, on R. Orontes. It was founded by Seleucus Nicator (c. 321 BC). The temple contained a statue of Apollo by Bryaxis, and was in the midst of a grove of cypress and bay trees, with beautiful gardens, baths, and porticos surrounding it. It was burnt c. AD 363. The probable site is now called Bêt-el-Mâ.

Daphne, family Thymelaeaceae, genus of shrubs of which *D. mezereum*, mezereon, and *D. laureola*, spurge laurel, are natives of Britain and Europe. *D. cneorum*, garland flower, from S. and C. Europe. *D. odora* and *D. retusa* of China, and others, are grown in gardens or greenhouses.

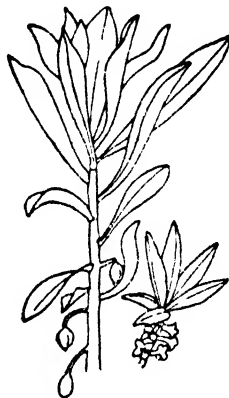
Daphnin (C₁₅H₁₁O₆), in chem., a bitter glucoside obtained from the bark of *Daphne mezereum* and *D. alpina*, found by Vauquelin. Also a dark green resin, regarded as the essential principle of the mezereon. It can be easily decomposed into sugar and a substance called daph-

netin, whose composition is represented by the molecular formula C₁₅H₁₁O₆. D. may be prepared artificially.

Daphnis, mythical shepherd and hero of Sicily, son of Hermes and a Sicilian nymph. As the reputed inventor of pastoral poetry, he figures largely in the bucolic poetry of the ancients (from the early 3rd cent. BC), and also in more modern imitations, as a conventional figure. He was under the protection of Artemis and was taught music by Pan. D. was beloved by a Nalad, who punished him with blindness for his infidelity to her. See Theocritus, *Idylls*, i; Virgil, *Ecloques*, v; W. Prescott, 'A Study of the Daphnis Myth' (*Harvard Studies in Classical Philology*, x, 1899).

'Daphnis and Chloë,' see LONGUS.

Dapitan, tn situated on the N. coast of Mindanao, an is. of the Philippine archipelago. It is a trading port, and a trade in coconuts, corn, rice, and cattle is carried on. Pop. 37,984.



DAPHNE LAUREOLA: SPURGE LAUREL

Da Ponte, Lorenzo (real name Emanuele Cornegigliano) (1749-1838), lt. librettist, b. at Ceneda on the Venetian mainland. He was of Jewish descent, but was converted to the Rom. Catholic faith by Lorenzo da P., bishop of Ceneda, whose name he adopted according to the custom of the time. About 1780 he was officially appointed by the Austrian Gov. to be poet to the It. Theatre in Vienna. He wrote librettos for Mozart's *La Nozze di Figaro*, 1786, *Don Giovanni*, and *Così fan Tutte*. He lived in London from 1793 to 1805, where he wrote for Drury Lane Theatre *La Capricciosa Corredo*, *L'isola del Piacere*, and *La Scuola dei Maritati*. In the U.S.A. (1805) he was appointed prof. of It. literature, Columbia, from 1825. There he wrote his lively and diverting *Memorie*, pub. between 1823-27.

Daqahlia, prov. of Lower Egypt, with an area of approximately 1020 sq. m. It is one of the most fertile provs. The chief tn is Mansûra. Pop. (1947 census) 1,414,905.

Daqiqi (Dakiki), Abu Mansur, Persian poet and a native of Tus or Bokhara. He was court poet to Prince Nüh II, successor of Mansur I on the throne of Persia (AD 976-7). A few fragments of his lyric verse remain. He was charged by Nüh to turn the Pahlavi *Khadhay-namak* ('Book of Kings') into Persian verse. D.'s labours were abruptly terminated by his assassination, by which time he had written about 1000 distichs. Firdawsi, whose great epic, the *Shahnama* ('Book of Kings'), was the continuation and completion of D.'s work, claimed to have been inspired in dreams by D.

Daquin, or d'Aquin, Louis Claude (1694-1772), Fr. organist, harpsichordist, and composer, b. Paris. At the age of 6 he played the harpsichord before Louis XIV and at 12 performed the organist's duties at the Sainte-Chapelle. Held various posts as organist, including that of the royal chapel. His music includes a cantata, church music, and organ pieces, but he is especially remembered as one of the great Fr. representatives of harpsichord music.

Darab, or Darabjerd, dist. and tn of Persia, in the prov. of Fars. The tn is situated at the base of high hills on a small stream, and is surrounded by orange and lemon groves, date palms, etc. Relics of great antiquity have been discovered in the vicinity. Pop. of tn about 6800.

Daraga, see LIZASPI.

D'Aragona, Tullia (1510-65), It. poetess, natural daughter of Peter Tagliavain d'A., archbishop of Palermo. Her works, which had a considerable contemporary reputation, imitate the style of Petrarch; they include *Rime*, 1547; *Dialogo dell'infinità d'Amore*, 1547; *Il Meschino attraversato detto il Guernino*, 1560.

Daralayeh, or Derayeh, ruined tn of central Arabia. It was at one time the cap. of the Wahabis, in Nejd, being composed of 5 separately fortified divisions. It was destroyed in 1818, after withstanding a siege which lasted about 7 months.

Darbhangha, tn, Bihar State, India. It is situated on the l. b. of the Little Bagmati R., 78 m. N.E. of Patna, and is the residence of the maharaja of D., formerly one of the largest landowners in this part of India.

D'Arblay, Madame, see BURNEY, FRANCES.

Darboy, Georges (1813-71), Fr. prelate, archbishop of Paris, 1863. He upheld the theory of episcopal independence, and, though vehemently opposing the doctrine of papal infallibility, submitted on the adoption of this dogma. At the siege of Paris, while ministering to the wounded, he was seized by the Communists, and shot in La Roquette prison, 1871. He trans. Dionysius (St Denis) the Areopagite, and wrote *Saint Thomas Becket, sa vie et ses lettres*, 1860; *Les Femmes de la Bible*, 8th ed., 1876; *Les Saintes Femmes*, 1877. See J. A. Foulton, *Histoire de la vie et des œuvres de Mgr. Darboy*, 1889.

Darby, John Nelson, see PLYMOUTH BRETHREN.

Dardanelles, or Strait of Gallipoli, anct

Hellespont, narrow channel connecting the sea of Marmara with the Aegean Sea, and thus separating Europe from Asia. It is about 48 m. in length, and varies in width from 1 to 5 m. One of the narrowest parts is between Abydos and Sestos, where, according to the classic story, Leander swam across nightly to visit Hero. This exploit was repeated by Lord Byron in 1810. It was also near this spot that Nereus crossed into Europe with his army (by two bridges of boats) in 480 bc, and Alexander the Great crossed to Asia in 334 bc. Sev. castles are situated on the shores of the strait, including two bearing the name of the D. on the sites of Abydos and Sestos. The chief coast tns include Gallipoli, Lapsaki, Galata, Kilid Bahr, and the fortified seaport of Sultanieh-Kalehsi. Both sides of the strait are strongly fortified, as it is the key to Istanbul. By a treaty of 1841 the European powers agreed that Turkey should be allowed to close the D. in time of war, and this understanding was reaffirmed in 1871 and 1878. In 1904, during the Russo-Jap. war, two Russian volunteer fleet cruisers managed to pass through as merchant ships. The D. were closed to merchant shipping in April 1912 during the Turco-It. war, but were reopened a month later in response to representations from Great Britain and other European powers. The Gallipoli peninsula was the scene of fighting during the second half of the Balkan war, 1913.

Attack on the Dardanelles, 1915.—Shortly after the outbreak of the First World War the Turkish Gov., under Ger. pressure, closed the D. to commerce, as a reply to the allied protest regarding the Ger. cruisers *Goeben* and *Breslau*, which, having taken refuge in Constantinople harbour, were dominating that city with the connivance of the pro-Ger. party under Enver Pasha. Thus Russian grain exports were effectually sealed up in the Russian ports, and a few days later Turkey was openly ranged with the central empires against the Allies. The Allies, realising how great would be the moral and practical effect of taking Constantinople, prepared to force the D. The political and military importance of the straits at this time was almost incalculable: the capture of Constantinople, which would have been the corollary to success, would not only have opened the way to the Russian grain cargoes, but would have thwarted Ger. control of the Bagdad railway, enormously enhanced allied prestige throughout the Muslim world, probably kept Bulgaria out of the war, and, further, by releasing the Russian armies in the Caucasus, have tended to shorten the war. It was, however, recognised that the operation of forcing the D. was hazardous, especially as Ger. experts had superintended the mounting of powerful 14-in. Krupp guns on the shores so as to command all approaches. From 19 Feb. to 15 Mar. a squadron of obsolescent Fr. and Brit. battleships, supported by the *Queen Elizabeth*, *Agamemnon*, and *Inflexible*, and commanded by Vice-Adm. De Robeck, intermittently

bombarded the forts Sedd-el-Bahr and Kum Kale at the entrance of the straits. On 18 Mar. an attempt was begun to reduce all the inner forts, commencing with Kilid Bahr, within a few weeks. The hope was that once the forts were reduced the minefields would be cleared and the way open for the fleet to proceed up to Constantinople, destroy the *Göeben* and *Breslau*, and take the cap. This ambitious plan seems to have been open to many objections (*consult Dardanelles Report*), especially strategic, and it is not surprising in all the circumstances that it failed. The guns of the forts at the entrance were silenced, but the real defences were in the Narrows, less than a m. in width, and commanded by the forts of Kilid Bahr on the W. side and those of Chanak on the E. or Asiatic side. The 15-in. guns of the *Queen Elizabeth* having carried out a bombardment from the gulf of Saros against the Chanak forts, the allied ships, comprising 15 Brit. and 4 Fr. vessels, moved towards the Narrows and concentrated their attack on Kilid Bahr, the impression of the commander being that the Chanak guns had been put out of action. The result was disastrous, for the Fr. ship *Bouvet* was shelled and sank with all on board, the *Irresistible* and *Ocean* were sunk (probably torpedoed) on 18 Mar., and both the *Infleible* and the *Gaulois* were severely damaged. The Brit. loss in personnel was 2000. The rest of the fleet steamed out again on the same day, and no further attempt was made to destroy the forts by a naval attack alone. Later, when the fleet co-operated with the landing force, 3 more Brit. battleships were lost, the *Gothic*, torpedoed off Gallipoli, 12 May, and the *Triumph* and *Majestic*, both torpedoed on 26 May. (For the land attack which was launched in the same year see under GALLIOLI CAMPAIGN). It was not until after Turkey had surrendered that Brit. warships were in fact able to pass up the D. (10 Nov. 1918).

Among the 14 points set forth by Woodrow Wilson in Congress in 1918 was that (No. 12) which insisted on the D. being permanently free to all ships. After the war the internationalisation of the straits became an accomplished fact under the treaty of Lausanne, 1923. A special convention demilitarised zones on both sides of the Bosphorus and sea of Marmara, and prescribed rules for preserving the freedom of the Narrows in peace and war which were applied by a mixed commission of the League of Nations. In 1936 Turkey applied for permission to re-fortify the zone, and this was granted by a new convention signed at Montreux. Turkish troops occupied the area on 21 July 1936. Under this convention belligerent warships may not pass through the straits to the Black Sea. After the Second World War Russia reopened the question of the passage of Russian warships through the D. A Russian note (24 Sept. 1946) carried still farther the diplomatic exchanges which began on 22 Aug., when the Soviet Gov. proposed to Turkey a revision of the regime of the straits which would substitute for

the existing loose but internationally sponsored Turkish control a regional defence arrangement between Turkey and the other Black Sea powers. The W. democracies (America, Britain, and France), expressing substantially similar views, replied that the regime of the straits was a matter of concern, not only to the Black Sea powers, but also to other powers, including the U.S.A. The Turkish reply rejected the Russian suggestions, while agreeing that the time might be ripe for a revision of the Montreux convention, but only by consultation between its signatories, with whom would be included the U.S.A. See H. W. Nevenson, *The Dardanelles Campaign*, 1918; A. Kearsey, *Notes and Comments on the Dardanelles Campaign*, 1934; and E. Chatterton, *Dardanelles Dilemma*, 1935.

Dardania was in ancient geography a kingdom in Mysia, Asia Minor, of which the size and boundaries were uncertain. It is mentioned in the *Iliad*, and was, according to Gk mythology, founded by Dardanus, who swam on an inflated skin from Samothrace to the Troad. The inhab. of D. were the Dardani.

Dardanus, son of Zeus and Electra, daughter of Atlas, was the mythical ancestor of the Trojans, called after him Dardanidae.

Dardanus, Dardanum, or Dardanium, in ancient geography, a city situated on the Hellespont in Mysia, Asia Minor, about 10 m. SW. of Abydos. It was built by Dardanus, who was, in Gk legend, the founder of Troy.

Dardistan (country of the Dards), name of a mountainous dist. in the NW. of Kashmir, India, where the R. Indus bends S.; extended as a geographical name for numerous tribes between Kashmir and Afghanistan, on the S. slopes of the Karakoram and Hindu-Kush Mts. It comprises the frontier dists. of Chitral, Swat, and Kafiristan, now part of Pakistan. The Dards are an Indo-European people, once Buddhists, now mostly Shīte Muslims. They are also called Kanjur. See J. Biddulph, *Tribes of the Hindoo Koosh*, 1880; and G. Leitner, *Hunza and Nagar Handbook*, 1893.

Dare (fish), see DACE.

Dar-el-Beida, see CASABLANCA.

Dares, priest of Hephaestus, mentioned in Homer's *Iliad*, v. 9, and praised for his wisdom. He was said to have been present at the siege of Troy, and an older story of Troy's destruction, supposed to have been written on palm leaves, was attributed to him. There is an extant prose narrative (44 chapters) ascribed to Dares Phrygius, *De Excidio Troiae Historia*, written in very bad Lat., purporting to be a trans. from the Gk by Cornelius Nepos, but apparently belonging to the 5th cent. AD. Guido delle Colonne's *Historia Troiana*, a romance based on the Lat. version in the 13th cent., closely resembles Benoit de Sainte-Maure's *Roman de Troie*.

Dar-es-Salaam (Arabic 'haven of peace'), seat of gov. of the Tanganyika (q.v.) terr., formerly cap. of Ger. E. Africa. Deep-water berths are being constructed (1956),

and vessels of 550 ft can enter the beautiful landlocked harbour. It is a railway terminus and thriving commercial centre of Tanganyika. There is electricity, water-borne sewage, and a good water supply. D. is a progressive, modern tn, beautifully situated. Pop. c. 69,300.

Darfield, par. and tn of W. Riding, Yorks, England, on the Dearne, 5 m. from Barnsley. Coal is worked in the neighbourhood. Pop. 6300.

Dar-Fur, prov. in the Sudan, formerly a centre of the slave trade. It was an independent kingdom until 1874, when it was nominally annexed to Egypt. Subsequently, however, it suffered from the domination of the Mahdi, and his successor, the Khalifa, until the defeat of the latter in 1898. It is inhabited chiefly by Arabs and a negro tribe, the Fur; the cap. is El Fasher (q.v.). The country is an undulating plateau, with flat sandy desert in the N. It produces grain, tobacco, gum arabic, tamarinds, dates, white melons, cattle, and camels. Big game is plentiful. Area 170,000 sq. m. Pop. variously estimated at 1,000,000–1,500,000.

Dargai, hill-range near the Khola Pass, 50 m. from Peshawar, W. Pakistan. During the Tirah campaign the Brit., under Yeatman Biggs, stormed the fortified heights held by Afridis and Orakzais, 1897.

D'Argenlieu, George Thierry (1889–), Fr. vice-admiral and member of the Carmelite order. Called up as a naval reserve officer in Sept. 1939 and rendered distinguished service. He joined Gon. de Gaulle in London as commander in June 1940. Went with the latter's Dakar (q.v.) expedition (Sept. 1940) and was wounded after landing there. Promoted to rear-admiral and sent as Fr. high commissioner to the Pacific. Returned in 1943 to take over the command of the Fr. naval forces stationed in Britain. Promoted vice-admiral (1943). In 1945 he was appointed Fr. high commissioner in Indo-China, being recalled in 1947. Decorated at the Brit. Embassy, Paris, in Nov. 1947. Demobilised in 1948, D. returned to his monastery as Father Louis de la Trinité of the Carmelite order.

Dargomizhsky, Alexander Sergeievich (1813–69), Russian composer, b. Tula. He was of a good family and was brought up on a country estate. His parents, however, had fled from their own home near Smolensk during the Napoleonic invasion of 1812. D. early showed musical talent and between 6 and 8 years of age was taught to play the piano and violin, while at 11 he had made some attempt at composition. Entered the civil service in St Petersburg and, moving in fashionable circles, became well known as an amateur pianist and as a composer of dilettante drawing-room songs. It was his chance meeting with his older contemporary Glinka which gave his talents a more serious bias, and the two composers may be said together to have symbolised the pretensions of Russian musical genius at this period: but whereas Glinka's music was idealistic and lyrical, D.'s was

realistic and dramatic. D., though inferior to Glinka, is a figure of some importance in the hist. of Russian opera: his first opera was *Esmeralda*, 1839, the libretto of which was taken from Victor Hugo's *Notre-Dame de Paris*; but it was not accepted for the Imperial Opera until 1847. This was followed by a cantata on *The Triumph of Bacchus*, a dramatic poem by Pushkin, which D. later converted into a ballet-opera, 1867. Then came the opera *The Russalka*, 1856, or *The Watersprite*, for the libretto of which D. again turned to Pushkin. This opera, though superior to *Esmeralda*, did not prove successful and D. wrote no further operas for some time. Meanwhile he produced *Knighi Errant* and *The Old Corporal*, dramatic ballads for voice and piano. Later D.'s association with Balakirev and his school gave him a leading part in the formation of a national and progressive school of Russian music, breaking with stale conventions and out-moded traditions. The influence of these principles is shown in his last opera, *The Stone Guest*, founded on the story of Don Juan as told by Pushkin. The opera was left unfinished at D.'s death, but was completed, on D.'s directions, by Rimsky-Korsakov, 1872. D.'s own views on opera resembled those of Gluck and Wagner in the adaptation of the music to the dramatic import of the text.

Dariál, see DAR'YAL.

Darién, Gulf of, inlet of the Caribbean Sea, situated in lat. 9° N. and long. 77° W., between Colombia and Panama. On the W. is the isthmus of Darién (q.v.), part of Panama. In the S. are the bays of Choco and Uraba, which receive the R.s. Atrato and León.

Darién, Isthmus of, otherwise E. Panama, part of the narrow neck of land joining central and S. America.

Darién Scheme, project started by a Scotsman, Wm Paterson, in 1695, to form a settlement on the isthmus of Darién for controlling trade between the E. and W. Paterson, the founder of the Bank of England, was a bold and enterprising man. His ostensible purpose was to estab. an E. India trade in Scotland; this finally developed into the plan of forming an emporium on each side of the isthmus of Panama to estab. trade between the opposite continents, and to wrest the keys of the world from Spain. William III was opposed to his scheme, but national enthusiasm carried it through, though it was unable to avert the disastrous fate of the settlement. In 1698 1200 Scottish colonists sailed from Leith to Panama (Puerto Escondido), to lay the foundations of New Caledonia. They made Acta their headquarters, with the name of New Edinburgh, and built a fort, New St Andrews. The Spaniards proved hostile, and the colonists unfitted to endure the climate and hardships of war and disease. The survivors returned home in 1699, and though two more companies had already been sent out to America a similar fate drove them back in 1700. See Sir J. Dalrymple, *Memoirs of Great Britain and Ireland*, 1790; J. Burton, *History of*

Scotland, vii, and *Darien Papers*, 1849; and J. Barbour, *W. Paterson and the Darien Company*, 1907.

Dario, Rubén (pseudonym of Félix Rubén García y Sarmiento) (1887-1916), Sp.-Amer. poet, b. Metapa, Nicaragua. He first came to Spain in 1892, and then settled in Paris. He is the creator of the movement known as the 'generation of '98.' His *Prosas Profanas*, 1896, transposing Fr. symbolist metres into Sp., produced a tremendous effect; and when D. returned to Spain in 1898, he found himself the leader of the 'modernists.' His verse is smooth and melodious, and yet of great rhythmic vitality. Later works include *Cantos de vida y esperanza*, 1905; *El poema del olvido*, 1910; *Canto a la Argentina*, 1910. His *Obras completas* were pub. in 22 vols., 1917-19. See E. K. Mapes, *L'Influence française dans l'oeuvre de Rubén Dario*, 1935; P. Salinas, *La poesia de Rubén Dario*, 1948. See also *La vida de Rubén Dario escrita por el mismo*, 1910.

Darius I (522-486 bc), first and greatest of the Persian kings bearing that name, b. 548 bc. He obtained the throne after the death of Cambyses, but for some time had to contend with rebellion, especially from Babylon under Nidintu-Bel. After obtaining peace within the empire, he proved himself in many ways a wise and enlightened ruler; he divided the empire into 20 satrapies for the purposes of gov., reorganised the system of taxation, and improved the roads. His conquests extended from the Indus valley to Thrace and Scythia. In his expedition of 515 bc he transported, according to Gk sources, 700,000 men across the Bosphorus on a bridge of boats. He conquered Thrace and his general, Megabyzus, subdued Macedonia, after which he pursued the Scythians as far as the Volga, but returned with a depleted army. In 499 bc the Ionians revolted and were helped by the Athenians. After subduing the revolt D. sent two expeditions against the Athenians. The first ended in the wreck of his fleet in 492 bc. The second ended in the defeat of the Persian army at the famous battle of Marathon, 490 bc. He d. while preparing for a third expedition. Rock inscriptions have been left by D. at Bisutun, Naqsh-e Rostam, and elsewhere. See R. Ghirshman, *Iran*, 1954.

Darius II of Persia (424-404 bc), son of Artaxerxes I by a concubine. He succeeded Xerxes II after murdering his own brother, Sogdianus, who had murdered Xerxes II. His reign was only notable for insurrection and misrule. He helped the Spartans in the Peloponnesian war.

Darius III (335-330 bc), last of the Persian kings of the Achaemenian dynasty; most of his short reign was occupied by defending the empire against Alexander the Great, who proved victorious. D. was treacherously slain by two of his satraps.

Darjeeling, tn in W. Bengal State, India, 300 m. N. of Calcutta. D. is famous as a hill-resort for the hot season, being over 7000 ft up, and was formerly the summer

cap. of Bengal. It affords magnificent views of the Himalayas, in particular of Kanchenjunga (28,146 ft), only 45 m. distant. It is a great centre of the tea growing industry.

Dark, Eleanor, see AUSTRALIAN LITERATURE.

Dark Ages, name loosely given to the early period of the Middle Ages between the fall of the Rom. Empire, AD 475, and the revival of learning on the discovery of the Pandects at Amalfi, 1137—roughly 700 years.

Darkhiker, see NEWT.

Darlan, Jean François (1881-1942), Fr. admiral, b. Nérac, Lot-et-Garonne. He entered the Fr. naval school, 1899. As a naval cadet he spent much time on the China station, where he acquired the first rudiments of diplomacy as well as naval and military experience. It was not, however, until 1912 that he was promoted a lieutenant. After that he was for a time instructor aboard the training cruiser *Jeanne d'Arc*. The First World War brought a complete change to his career. He obtained transfer to the army as an expert gunner, fought at the Meuse, Alsace, Salonika, and in the battle of Verdun. After the armistice he went to the Rhineland and, later, returned to the navy. It was only in 1926 at the age of 45, and with the rank of *capitaine de vaisseau*, that he suddenly achieved a position of great influence. Georges Leygues, minister of marine, appointed him assistant *chef de cabinet* on the military side, and, but for a short interruption, he remained there until 1934. Then for 2 years he was commander-in-chief of the Atlantic fleet, returning to the ministry as chief of the general staff in 1936. Throughout the period 1926-39 his authority came to him rapidly. In 1929 he was made *chef de cabinet* and a rear-admiral. Three years later he became a vice-admiral and a grand officer of the Legion of Honour.

In 1939 he was promoted admiral. This made him head of the Admiralty as well as commander-in-chief of all the naval and military forces in France, without regard to seniority. On the capitulation of France in 1940 he became minister of marine in the Pétain Gov. Later he became vice-premier, foreign minister, and minister of the interior, as well as minister of marine. He was now the real power in France, keeping in close touch with Ger. leaders. In April 1942 he began to lose favour with the Gers., and Laval (q.v.) took his place as Prime Minister. D., however, retained command of the armed forces, and, when the Brit. forces took over Madagascar (q.v.), he called on the garrison to resist to the utmost. In Nov. 1942, after the Allies landed in Morocco and Algeria, he ordered cease fire, and himself assumed the role of chief representative of Fr. N. Africa in the name of Pétain. By arrangement with the Amer. commander-in-chief, Gen. Eisenhower, he was allowed temporary political status, which he himself enhanced into that of chief of state in Fr. Africa, with a Fr. Council under him. His status provoked

bitter criticism among the de Gaullists and in the Allied press. Soon afterwards he was assassinated at Algiers (24 Dec. 1942), and the Fr. Imperial Council unanimously chose Giraud to succeed him as high commissioner for Fr. Africa.

Darlaston, tn of Staffordshire, England, traditional centre of the nut and bolt industry. Manufs. include accessories for motor vehicles and aircraft, steel furnishings, and washing machines. Pop. 22,024 (1954).

Darley, Felix Octavius Carr (1822-88), Amer. artist and engraver; son of an actor of Eng. birth. He went to New York in 1848, engraving outline illustrations of Irving's works (*Sketch Book*, *Rip van Winkle*, *Legend of Sleepy Hollow*) for the Amer. Art Union, 1850. D. became a member of the Academy of Design in 1852, and also of the Amer. Society of Painters in Water-colours. He illustrated some of Lossing's many hist. of the U.S.A.; Hawthorne's *Scarlet Letter*, 1879; and novels of Cooper, Dickens, and Simms.

Darley, George (1795-1846), poet, critic, and mathematician, b. Dublin. Educ. at Trinity College there, he went to London, where he pub. his first poem, *Errors of Ecstacy*, 1822. He wrote for the *London Magazine*, in which appeared his story, *Lilian of the Vale*, 1826, containing the well-known song 'I've been roaming.' His poem *Sylvia, or the May Queen* appeared in 1827. Thereafter he joined the staff of the *Athenaeum*, in which he showed himself a severe critic. He was also a dramatist and a profound student of Eng. plays, editing those of Beaumont and Fletcher in 1840. So deeply was he imbued with the spirit of the 17th cent. that his poem 'It is not beauty I desire' was included by Palgrave in the first ed. of his *Golden Treasury* as an anonymous lyric of that age. An accomplished mathematician, he also pub. textbooks on geometry, algebra, and trigonometry. See C. C. Abbott, *The Life and Letters of George Darley*, 1928.

Darling, Sir Charles John, first Baron (1849-1936), judge, eldest child of Charles D., estate manager. A delicate child, he passed his boyhood principally at home—first at St. John's Abbey (Abbey House), Colchester, where he was b.; and then at Langham Hall. Articled to a solicitor in Birmingham, he did not complete his articles. He was called to the Bar in 1874, practised journalism, and went the Oxford circuit. As a Conservative he was returned for Deptford, 1888, and remained its representative until elevated to the Bench. Appointed judge of the high court and knighted, autumn of 1897—his appointment creating indignation in the Liberal party and consternation in the Temple (see Lord Birkenhead's *Contemporary Personalities*, 1924). He became known as the judicial humorist. He presided over the ludicrous 'Black Book' (Pemberton Billing) trial, May-June 1918; and over the committee on courts martial, 1919. Among the trials in which he was judge were the murder cases of Steinie Morrison (1911) and Herbert

Rowse Armstrong (1922). Pubs.: *Meditations in the Tea-Room*, *Scintillae Juris*, 1877; *Seria Ludo*, 1903; *On the Oxford Circuit and other Verses*, 1909; *Crime and Insanity*, *Murder and its Punishment*, *Musings on Murder*, 1925; *A Pensioner's Garden*, 1926; *Reconsidered Times*, 1930; and *Autumnal Leaves*, 1933.

Darling, Grace Horsley (1815-42), heroine, b. in Northumberland; daughter of Wm. D. (1795-1860), lighthouse-keeper on Longstone, one of the Farne Is. At the risk of their lives she and her father rescued 9 people from the *Forfarshire*, sailing from Hull to Dundee, and wrecked near Longstone lighthouse in 1838. Their heroism was warmly appreciated and rewarded, but she d. of consumption soon afterwards. See life by C. Smedley, 1932.

Darling, Sir Ralph (1775-1859), general. As ensign in the 45th Foot he helped to suppress the Negro insurrection under Fédor in 1793 in Grenada. In 1796 he was made military secretary, served in the W. Indies, and was deputy adjutant-general in the Walcheren expedition. Was governor of New S. Wales, 1825-31. Accused of excessive severity, he was recalled and tried, but acquitted and knighted by William IV in 1835; he became general in 1841. Many places (riv., mts, downs, etc.) were named after him in this period of geographical discovery in Australia. See T. Brahm, *History of New South Wales*, i, 1846.

Darling: 1. Australian riv., 1700 m. long, rising as the Macintyre in the Dividing Range between New S. Wales and Queensland. For some way it forms the boundary between the two, then enters S.E. Queensland. It is a trib. of R. Murray, joining it at Wentworth. Other names are the Calewatta and Barvon. It is navigable as far as Bourke at some times of the year, at others being merely a series of shallow lakes. Among its tribs. are R.s Dumaresque, Colgon, Warrego, Gwydyn, Macquarie, Bogan, and Namoi.

2. Range of mts. in W. Australia, running N. to S., parallel with the coast, 20 to 70 m. inland. Sandalwood and other timber abound.

Darling Downs, rich grazing, dairying, and agric. dist. of Queensland, Australia. Centre, Toowoomba (q.v.), 101 m. W. of Brisbane.

Darlington, municipal and parl. bor. in the S. of the co. of Durham, 18 m. S. of Durham and 33 m. from Newcastle, on the Skerne, near its junction with the Tees. It is in the N.E. region of Brit. Railways and on the main N. road from London to Edinburgh, and a network of railway lines branching in or near D. gives access to all parts of the kingdom. Industrially it is close to the coal and iron mining dists. The prosperity of D. began with the opening in 1825 of the Stockton and D. railway, the first railway on which a steam locomotive was used for passenger traffic. The first locomotive so used, built by George Stephenson, now stands on a pedestal at Bank Top station on the former L.N.E.R. D., however

has a long record as an industrial tn; in the days of Bishop Pudsey, more than 700 years ago, dyeing was a flourishing industry in the tn. At the beginnings of the Industrial Revolution the tn was still principally concerned with the textile industry. Carpet weaving was another prominent local industry. To-day the textile industry is represented by the largest factory in the world devoted to the manuf. of knitting wool, and there is also a clothing factory in the tn, although the manuf. of railway engines and other plant and equipment, including rolling stock, signals, signal wire pulleys, rails, and sleepers takes pride of place. Steel and iron forgings and steel castings are made for ships, as well as propeller shafts, rudders, guns, and massive stern frames. There is a great bridge-building industry, and among the bridges which were made at D. are the Blue Nile bridge at Khartoum; the White Nile bridge at Gox Sbu Gourma (1911); the Lower Zambesi bridge (1935); and the Victoria Falls bridge; and, in Britain, the King Edward VII bridge, Newcastle; Chiswick bridge; Tees transporter bridge; and Newport bridge over the Usk. Other industries are agric. implements and tools; are welding; boiler making and heating engineering; bricks and tiles of all sizes and types; constructional engineering; electrical equipment; furnaces; insulating material; wire manufs. of all kinds, including extra high strain wire for ropes and hawsers.

D. is a clean and well-paved tn, and, as is often the case in our older tns, the par. church is the most outstanding feature. The present church was founded by Hugh Pudsey, bishop palatine of Durham and nephew of King Stephen, on the site of an earlier Saxon building (begun 1180), and was restored by Sir Gilbert Scott, R.A., during the 19th cent. The great bells were recast in 1633, and others date from 1755 to 1866. Among its monuments is a carved figure said to represent Berengaria, wife of Richard I—though why the memory of a queen who never visited England should be perpetuated in D. is an unexplained mystery. The tn hall (1863), apart from its handsome tower, hardly does justice to D. Haughton-le-Skene church, dedicated to St. Andrew, is also an architectural feature of the bor. Memorials in the tn include those to Joseph Pease, son of Edward Pease, the Quaker pioneer of public railways and the first Quaker M.P. to sustain in Parliament his right to affirm instead of taking the oath; John Fowler, inventor of the steam plough; Dr. R. Taylor Manson, geologist and botanist; and John Fothergill, the first teetotal doctor. The First World War memorial takes the form of a hospital founded 1926. The public library, opened in 1885, was endowed by Edward Pease and modernised in 1933.

For over 400 years D. was ruled by the bishops palatine. No charter has been found, but it is believed to have become a bor. by prescriptive right in the time of Hugh Pudsey. In 1270 John of D., who assisted in preparing an ed. of the *Con-*

cordances of Hugh of Saint-Omer, issued his *The Greater English Concordance*, probably the first ever issued. He was confessor to Henry III and became archbishop of Dublin. During the Pilgrimage of Grace a number of the men of D. joined in the rising led by Earls Neville and Percy, and suffered execution. In his eccles. survey of the dist. Leland describes D. as 'the best market town in the Bishoprick after Durham.' After the rising the king deprived the bishops palatine of much of their temporal power, though it was not until 1868 that D. was represented in Parliament. James II created his 'friend,' Catharine Sedley, baroness of D. in 1685; the title was revived in 1722 for George I's 'friend,' Madame Kilmansegge; and in 1754 the tn's name was properly incorporated in the peerage when Harry Vane was created Earl D.—a title now extinct. In 1875, on the occasion of the jubilee of public railways, the statue to Joseph Pease was unveiled by the Duke of Connaught. Pop. 83,820 (1954).

Darlingtonia, genus of one species, family Sarraceniacae; a herbaceous perennial, *D. dalicornica*, of California, with curious pitcher type leaves, and whitish or pale green flowers in spring; grown under shady, cool, moist conditions under glass. See PITCHER PLANTS.

Darmesteter, Arsène (1846–88), Fr. philologist. In 1881 he was called to the Faculté de Paris as prof. of the Fr. language and literature of the Middle Ages. His publs. include *Traité de la formation des mots composés dans la langue française*, 1873; *De la création actuelle de mots nouveaux dans la langue française*, 1877; *De Florentine*, 1877; *Glosses et glossaires hébreux-français*, 1878; and *La Vie des mots étudiés dans leur signification*, 1887. With Hatzfeld he wrote *Le XVII^e Siècle en France*. D. began with him also *Dictionnaire général de la langue française*, finished by Hatzfeld and Thomas, 1890–1900. His main articles were collected by his brother James in *Reliques scientifiques*, 1890. The *Cours de grammaire historique de la langue française* was ed. by E. Muret and L. Sudre, 1891–95.

Darmesteter, James (1849–94), Fr. orientalist, graduated from Lycée Bonaparte, Paris, 1867. He was tutor at the École des Hautes Études, 1877; prof. of Iranian language and literature at the Collège de France, 1885. Among his most famous works are *Haurvatat et Ameretat, essai sur la mythologie de l'Avesta*, 1875; *Ormuzd et Ahriman, leurs origines et leur histoire*, 1877; *Études iraniennes*, 1883; *Le Mahdi (The Mahdi, Past and Present, trans. 1885)*, 1885. D. visited India (1886), becoming fellow of Bombay Univ. *Chants populaires des Afghans*, 1888–90, resulted from this visit. He trans. poems by his wife, Agnes Mary F. Robinson, afterwards Mme Duclaux (q.v.), and trans. the *Zend-Avesta in Annales du musée Guimet*, 1892–93; and ed. it for M. Muller's *Sacred Books of the East*, 1892–93.

Darmstadt, Ger. tn in the Land of Hessen (q.v.), at the foot of the Odenwald

(q.v.), 23 m. SE. of Wiesbaden. It became a city in 1330; but, although famous as a cultural centre and an imperial residence, it remained small; at the beginning of the 19th cent. its pop. was only 8000. The rapid growth of the city in the 19th cent. was due to the development of its chemical industry. During the Second World War the centre of the city was almost completely destroyed; since then the city has been largely rebuilt. In the Allied advance to the Rhine in 1945 the 5th Div. of the 12th Corps of Gen. Patton's (q.v.) Amer. Third Army crossed the Rhine S. of Mainz (q.v.) on 22-3 March. The rest of the Corps crossed the riv. and seized D. on the 25th, and then swept on to capture intact the Main bridges at Aschaffenburg (q.v.). D. has a technical univ. (1836), an artists' colony, an institute of music, and sev. museums, including a museum of baroque porcelain and a hunting museum. It has an important chemical industry, and it is a great publishing centre. Among the great names associated with the city are those of Liebig (who was b. here), Weber, Goethe, Herder, and Flotow (q.v.). Pop. 120,800.

Darnel (*Lolium temulentum*), weed found in corn fields thought to be the 'tares' sown by the enemy in the farmer's corn-field as related by Jesus Christ. If the plant is infected with a fungus it becomes poisonous to man and beasts, causing giddiness and loss of sight. Contaminated bread was at one time common, and it was illegal, in ancient times, to add D. to brewing barley, although D. was thought to improve the flavour of the brew.

Darnétal, Fr. tn in the dept of Seine-Inférieure, 2 m. E. of Rouen. It is on the R.s Robec and Aubette. There are manufs. of heavy woollen goods, blankets, etc., and also other textile factories, and engineering works. Pop. 7500.

Darnley, Lord, see LENNOX.

Darnley, anct Scottish barony of Renfrewshire, 4 m. from Paisley, 2 m. from Barrhead. From it Sir John Stewart took the title baron (c. 1461). He later became earl of Lennox; he was grandson of Sir J. Stewart of D. (d. 1429). Henry, Lord D. (1545-67), was a descendant.

Darolipons, see GODMANCHESTER.

Dart, riv. of England, which rises near Cranmere Pool, in the centre of Dartmoor. It is 36 m. long, 10 m. being tidal. It widens into a broad estuary, and is navigable to and from Dartmouth.

Dart (fish), see DACE.

Dartford, industrial tn in NW. Kent, England. It is situated on the Darent, about 2 m. from its entrance into the Thames, and 16 m. E. of London. In 1355 Edward III founded an Augustinian nunnery there, and in 1381 Wat Tyler's rebellion took place. The principal industries are engineering, flour-milling, paper-making, and the manuf. of chemicals. In 1590 the process of rolling and slitting iron was first estab. in England here by a native of Brabant, and in the same reign paper-making was introduced by Sir John Spelman. Richard Trevithick, the inventor of the locomotive steam engine, d. and was buried here in 1833.

The foundation stone of the Livingstone Hospital was laid by Sir H. M. Stanley, the African explorer, in 1894. There is a memorial in St Edmund's burial ground to the martyrs burnt here in 1555. Pop. 40,544 (1954).

Dartmoor, plateau in the SW. of Devonshire, England. Its length is about 23 m. and width 20 m. The mean altitude is 1500 ft. The higher parts are bleak, wild, and rugged, composed of masses of granite, the higher points of which are called tors, Yes Tor, 2028 ft, and High Willhays, 2039 ft, being the most lofty. The lowlands are well wooded and form a beautiful contrast with the bleak moorlands. In the centre of the moor lie the pools and morasses which form the headwaters of the chief Devonshire streams. Of the royal forest which occupied the centre of D. before the Conquest, small oaks and undergrowth in rough tracts alone remain. Wistmans Wood of stunted oaks is notable. The moor abounds in interesting prehistoric antiquities, such as avenues of large standing stones, sacred or sepulchral circles, dolmens, etc. Near Chagford may be found a fine example of a primitive vil. of rude granite blocks. Much of the scenery is exceedingly wild and beautiful, Lydford Gorge being famous. At Princetown (q.v.) is the great convict prison. A good picture of the scenery, atmosphere, and life of D. may be obtained from many of Eden Phillpotts's novels. See S. Baring-Gould, *A Book of Dartmoor*, 1900.

Dartmouth, George Legge, Baron (1647-1691), admiral, eldest son of William Legge, Earl of Dartmouth (c. 1609-1670); he served in the navy during the Dutch war, 1665-7, and held many offices and commands in the navy and army. Entrusted by James II with the prevention of the landing of William of Orange, he did nothing, the disaffection of the fleet being marked. He took the oath of allegiance, but in 1691 was arrested for treason and d. in the Tower before trial.

Dartmouth, seaport and municipal bor. in S. Devon, England, 8 m. SW. of Torquay, and 30 m. SW. of Exeter. The tn is picturesquely situated on the terraces of a craggy hill, near the mouth of the Dart. Many of the streets are narrow, and include some well-preserved timbered houses. The castle, at the entrance to the harbour, dates from the reign of Henry VII, though the original castle was built in the time of Edward IV. The spacious, land-locked harbour has made it a favourite resort of yachtsmen. It formerly had a considerable trade in Newfoundland fisheries, but its present trade is chiefly of a coastal character. The R.N. College (see NAVAL EDUCATION) is situated here. At D. Richard I. embarked with his crusaders for the Holy Land in 1190. Pop. 6000 (1954).

Dartmouth, tn in Nova Scotia, Canada, on the E. side of Halifax Harbour, connected to Halifax City by mile-long Angus L. Macdonald suspension bridge with 165 ft clearance above low water. A commercial centre, it manufs. rope, aircraft

parts, bolts and nuts, and molasses, repairs and builds ships, and has large oil refineries and a naval research estab. Near by is a naval air base, and the commercial airport at Kelly Lake. D. has increased in size owing to expansion of the structures connected with defence services and to 50 per cent increase in population since 1941. Pop. 15,037. See J. P. Martin, *The Story of Dartmouth* (privately printed).

Dartmouth College, institution for the higher education of men, founded, 1769, in Hanover, New Hampshire, U.S.A., and named after the second Earl of Dartmouth. Its spacious campus overlooks the Connecticut River and has a view of the White Mts. Alongside the college are a medical school and schools of engineering

The board is placed so that the centre is 5 ft 8 in. from the ground and the throwing line is drawn 9 ft from the board. The player who throws nearest the centre has first turn, a turn consisting of 3 D. thrown in succession. In doubles, players of opposing sides throw in order and alternately. The method of scoring is by subtraction from the target total—normally 301 for singles and 501 for doubles. A side must score a 'double'—that is, lodge a dart in the outer ring—before beginning to score, and must also finish on a double or a bull, achieving the exact target score. If a player scores more or one less than the target his turn is over, and his score during it is not counted. Under some rules he must at his next turn



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DARTMOOR: RIPON TOR AND MOORLAND ROAD FROM HAYTOR ROCKS

and business administration. The teaching staff numbered 382 in 1955; students 2934. The libraries contained 750,000 vols.

Darton, par. and tn of Yorkshire (W. Riding), England, on the Dearne, 2½ m. NW. of Barnsley. It has coal-mines, and manufs. screws and nails. Pop. 11,400.

Darts is essentially a game of the Eng. inn and public house, played on a round board divided by wires into 20 triangular sections of equal size, higher numbers sandwiched between low ones. A dart in the narrow wired outer circle counts double the points scored by a plain throw into the section, and a throw into a narrow wired circle halfway between the outer ring and the bull's-eye counts treble the number. The bull's-eye consists of two small concentric circles counting 25 and 50 points respectively.

try for the score he required immediately before he threw the dart which 'broke' the target. There are many variations of basic D., among the most popular being Round the Clock and Shanghai. In Round the Clock all play against all, with 4 D. to the turn, starting on a double, then throwing to place one dart in each segment from 1 to 20, one in the bull and finish on a treble. A player scoring with the last dart of his turn has another turn of 4 D. Shanghai is played round the board from 1 to 20, each player scoring as many as possible in each segment with his 3 D. Whether or not a score is made in the section aimed at, a player throws for the next section on the following turn. Highest score for the full circuit wins.

Daru, Pierre Antoine Noël Bruno, Count (1767-1829), Fr. statesman and soldier, b. Montpellier; educated at the military

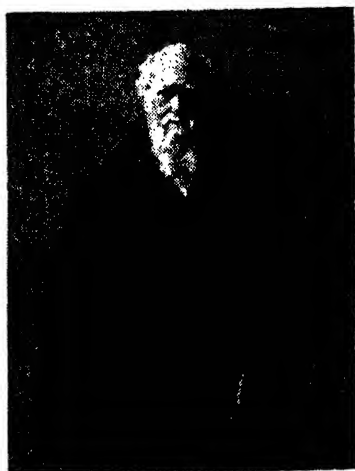
school at Tournon. He was commissary to the revolutionary army, 1793: was imprisoned on a charge of friendliness to the royalists, but was released on the death of Robespierre. He subsequently won rapid promotion, being an outstanding administrator. In 1799 he was employed as chief commissary to the army in Italy by Napoleon. He drafted the treaty of Pressburg after the battle of Austerlitz. He was made secretary of state, 1811, and retired from public life on Napoleon's abdication in 1814. In 1819 he was made a member of the chamber of peers. His writings include hist. of Brittany, and of the Venetian rep.

Darvel, burgh and tn of Ayrshire, Scotland, situated on the Irvine, 10 m. from Kilmarnock. Carpets and lace are manufactured. Pop. 3237.

Darwen, municipal bor. of Lancashire, England, 20 m. NW. of Manchester by rail, situated on the D. There are collieries and stone quarries: the tn is a centre of the cotton trade, and has engineering, plastics and paint industries, paper mills, silk manufs. and fire clay works. Pop. 30,827 (1954).

Darwin, Charles Robert (1809-82), naturalist, grandson of Erasmus D. (q.v.) and son of Robert Waring D. and Susannah, daughter of Josiah Wedgwood of pottery fame, was b. at Shrewsbury and d. at Downe; buried in Westminster Abbey. He early evinced a passion for collecting, and a taste for chem. After leaving Shrewsbury School he went to Edinburgh, and later to Cambridge, Univ. His studies appear to have been comprehensive, but they in no way inclined him, as was intended, to follow his father's profession of medicine. The subjects that fascinated him were zoology and botany, and his active mind and abundant energy manifested itself in a love of sport and the collecting of beetles. The seal on his future career was set by the invitation, through the influence of his close friend Henslow, botany prof. of Cambridge, to join H.M.S. *Beagle* as naturalist on her celebrated voyage in 1831 to S. America and the Pacific. The immediate results of his assiduity on this scientific mission are to be found in his first pub. work, *Journal of Researches into the Natural History and Geology of the Countries visited during the Voyage of H.M.S. 'Beagle', 1839*. From the time of his return, in 1836, he settled down in England for the rest of his life, marrying his cousin, Emma Wedgwood, in 1839. With the aid of his collections from the voyage and a Treasury grant, he then worked on his second book, *The Zoology of the Voyage of H.M.S. 'Beagle', 1839-42*. From this point the preparation of his great constructive theories begins. The industry he displayed in spite of poor health was remarkable. In 1859 his epoch-making *On the Origin of Species by means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life* was pub., expounding the doctrine now known as Darwinism (q.v.). His later scientific speculations are in the main extensions of this theory. A curious feature in con-

nection with *The Origin of Species* is the fact that its thesis was in its essentials formulated independently by his great friend, Prof. Alfred Russell Wallace (q.v.), while abroad, who submitted his paper on the subject to D. The total absence of jealousy on the part of the two naturalists, and the harmony in which they severally conducted their researches, forms one of the romances of Eng. scientific progress. In 1871 he pub. *The Descent of Man, and Selection in Relation to Sex*, which in some respects excited still more attention than the earlier and greater work, by reason of its searching inquiry into the ancestry of man. In this connection it is curious to note that the prejudice excited in the vulgar mind by D.'s speculations was due in great



N.P.G.
CHARLES DARWIN

The painting by the Hon. John Collier.

measure to the error of supposing that he advanced the theory of man's descent from the ape (see under DARWINISM). The theory of sexual selection as a process in the evolution of man, briefly adumbrated in *The Origin of Species*, was elaborated in *The Descent of Man*, but at the present day it has been very generally discredited. As a man D. possessed a strong frame, was thin and tall, and walked with a slight stoop, but in constitution he was far from robust, ultimately succumbing to some affection of the heart. In character he appears to have been a man of no pretensions and of considerable personal charm and warm sympathetic geniality. A full list of his works is to be found in the works of his son, Sir Francis D. His botanical works include *On the Various Contrivances by which British and Foreign Orchids are*

fertilised by Insects, 1862; *Insectivorous Plants*, 1875; *The Effects of Cross- and Self-fertilisation in the Vegetable Kingdom*, 1876; *The Different Forms of Flowers or Plants of the Same Species*, 1877; and *The Power of Movement in Plants*, 1880, which was a corollary of his *The Movements and Habits of Climbing Plants*, 1865. Among his zoological works are, besides the works on the voyage of the *Beagle* (the most popular of which is *A Naturalist's Voyage*, pub. in 1889), *A Monograph on the Cirripedia*, 1851-3; *Fossil Balanidae and Verrucidae*, 1854; and *The Formation of Vegetable Mould through the Action of Worms*, 1881. His works on geology were numerous, and include *The Structure and Distribution of Coral Reefs*, 1842; *Geological Observations on the Volcanic Islands visited during the Voyage of H.M.S. 'Beagle.'* 1844; and *Geological Observations in South America*, 1846, all of them included in the general work entitled *Geology of the Voyage of the 'Beagle.'* Miscellaneous works include *The Variation of Plants and Animals under Domestication*, 1868, and *The Expression of the Emotions in Man and Animals*, 1872. See Sir F. Darwin (ed.), *Life and Letters of Charles Darwin*, including an Autobiographical Chapter, 1887, and *Autobiography of Charles Darwin*, 1929; and L. Huxley, *Charles Darwin*, 1921. See also DARWINISM; EVOLUTION.

Darwin, Erasmus (1731-1802), scientific writer, poet, and physician, *b.* Elton, near Newark, 12 Dec. Educ. at St John's College, Cambridge, and at Edinburgh Univ., where he took his degree in medicine. He settled as a doctor at Lichfield, and won a high professional reputation, so much so that he was offered, but declined, the appointment of physician to George III. He is said to have been an athletic man and of temperate habits, the advantage of which he seems to have omitted no opportunity of pointing out to those over whom his influence extended, and in this respect he rendered good service to the poor of Lichfield. His writings were varied, yet essentially those of a man of scientific mind, which bins robs his verse of the true poetic quality, full though its subject matter may be of sylphs, nereids of the grot, and gnomes, and dignified with the Spenserian formula of personification. Posterity has largely forgotten his work, yet his *Zoonomia, or the Laws of Organic Life*, 1794-6, a pathological work, together with a treatise on generation, is significant in that, according to his far more famous grandson, Charles D., he anticipated the views of Lamarck. But his literary reputation rests mainly on his poem *The Botanic Garden*, 1789, 1791, a long poem in deasyllabic rhymed couplets, instinct with scientific interest in nature, but, if polished, artificial, stilted, and pompous. In the second part, entitled *The Loves of the Plants*, he follows the system of Linnaeus by personifying each plant; and he appends botanical comments in which the praise of scientific men recurs. In 1800 appeared his *Phytologia; or the Philosophy of Agriculture and*

Gardening, a lengthy work in one vol. All his works excited considerable attention, and by some were extravagantly praised, by others as unreasonably disparaged, but at the present day they are but little read or consulted, though they scarcely deserve to sink into complete oblivion; for they reveal a writer of a highly original turn of mind, well versed in physics, with a rare aptitude for seizing on and illustrating natural analogies. But he was over-fond of tracing false analogies, and showed the faults of a credulous collector and of a fanciful reasoner. As a poet he lacked inspiration. He was a free-thinker and, as implied above, an enthusiastic botanist, possessing an 8-acre botanical garden. Some of his ideas on evolution foreshadow the work of his grandson (see DARWINISM). His first wife *d.*; and to please his second he removed to Derby. By his first wife he was the grandfather of Charles D., by his second of Francis Galton. He *d.* suddenly of heart disease at Beardsall Priory. See S. Butler, *Evolution Old and New*, 1879; C. Darwin, *Life of Erasmus Darwin*, 1887; J. Huxley, *Darwin*, 1921, 1948; H. Pearson, *Doctor Darwin*, 1930; and J. V. Logan, *The Poetry and Aesthetics of Erasmus Darwin*, 1938.

Darwin, Sir Francis (1848-1925), biologist, *b.* Down, Kent, the third son of Charles D. He was in intimate association with his father's work till the latter's death; was editor of his father's biography. In 1884 appointed univ. lecturer and reader in botany to the univ. of Cambridge; president of the Brit. Association, 1908, at Dublin. Pub. *Practical Physiology of Plants* (with E. H. Aceton), 1894, and *The Elements of Botany*, 1895. His admirable *Life and Letters of Charles Darwin*, 1887, was followed by *More Letters*, 1903. He is chiefly remembered by students for the type of potometer devised by him to measure rate of water intake by plants.

Darwin, Sir George Howard (1845-1912), physicist and mathematician, *b.* Down, Kent, the second son of Charles D. After a distinguished career at Cambridge Univ. he went to the Bar, but returned to Cambridge as Plinian prof. of astronomy and experimental philosophy, 1883. He was probably the greatest worker in applied mathematics since Lord Kelvin. His chief work was concerned with the mathematical problem of three bodies—with the attraction of rotating fluid bodies, with the theory of the tides and the estimate of their effects during the separation of the moon from the earth, and the pressure of loose earth. In the historical dept of astronomy, D. was chiefly concerned with the genesis of the moon from the earth. His pub. work is mainly to be found in *Scientific Papers*, Cambridge, 1898. He pub. a popular summary of his work on the tides, *The Tides and Kindred Phenomena of the Solar System*, 1898.

Darwin, port and most northerly tn in Australia, cap. of the Northern Terr., on a fine N. coast harbour. It is an international airport, and the terminal port of regular shipping services from both E.

and W. Australian coast ports. It is connected to Alice Springs (q.v.) by air and by the Stuart Highway. Rapid and continuing development of the Ter's resources is causing D. to expand. Pop. 8550.

Darwin, Mount, in Chile, situated near the S. coast of the main is. of Tierra del Fuego (q.v.); height about 7000 ft. D. Sound (10 m.) is a continuation of Beagle Channel on the SW. of Tierra del Fuego.

Darwinism, or the **Darwinian Theory**, theory popularly but erroneously identified with the dawn of the method of evolution, especially as applied to the genesis of the human species. The D. T. as expounded in Charles Darwin's *Origin of Species*, accepting the preconceived notion of evolution as such, proceeded, by a brilliant extension of the Lamarckian opinion that all species, including man, are descended from other species, to enunciate by the light of a mass of biological facts the law of natural selection, and indirectly to refute the traditional belief in the immutability of species and the expression of that belief in the current theological conception of a special or separate creation by direct divine interposition. D., or more popularly the doctrine of the survival of the fittest through a process of natural selection, is primarily concerned with the fact of the existence of variations in species, as explanatory of the hitherto incomprehensible and marvellous co-adaptation in nature of organic beings. Briefly D. or the D. T. is this: there is no independent creation of organic beings from an archetype, their embryological relations, mutual affinities, and geographical distribution being opposed to any such hypothesis; an investigation of plants and animals shows that man, by a process of artificial selection, conscious or unconscious, has been able to produce for his own ends numerous variations of species. Applying this principle of artificial selection of species under domestication to organic beings in a state of nature, the old distinctions between species and varieties break down; in nature dominant or flourishing species produced the greatest number of varieties, and the slight variations of all parts of an organism furnished in nature itself the material for selection. Those organic beings that vary, however slightly, in a manner profitable to themselves have the best chance of surviving, and therefore of being naturally selected. Natural selection inevitably causes much extinction of the less improved forms of life, and from a consideration of the high geometrical ratio of increase of organic beings to the means of subsistence a struggle for existence must follow, and that struggle is most severe between varieties and individuals of the same species. Hence the process of natural selection leads to the survival of the fittest, or the preservation of favourable individual differences and variations, and the corresponding destruction of those which are injurious.

The Origin of Species also briefly outlines the process of sexual selection, or

'the struggle between the individuals of one sex, generally the males, for the possession of the other sex.' The hypothesis of sexual selection is used by Darwin to explain peculiarities appearing in one sex and becoming hereditarily attached to that sex whether those peculiarities appear under domestication or in nature. *The Descent of Man, and Selection in Relation to Sex* is really an application of the principles expounded in *The Origin of Species* to the human species. In this work Darwin collects evidence to show the descent of man from some lower form, and from the evidence provided by homologous structures and embryological development infers that man and anthropomorphous apes had a common ancestor. The theory of sexual selection has been very generally abandoned at the present day; according to this theory differences in the secondary sexual characters of male and female (e.g. in the plumage of birds) can be explained in terms of selection value during breeding: those male birds with the most brilliant colouring would be selected by the females, so that the colours would be perpetuated and would become more extensive in succeeding generations. Darwin accepted the theory of evolution apart from the existence of its motive cause. But the proof of the existence in nature of the material for variations of species is believed by many to supply a motive cause in itself. There can be no doubt of the almost universal acceptance of D., notwithstanding the prejudice roused at its promulgation, chiefly in religious quarters. The value of the theory in relation to evolution is shown by its application to sociology, psychology, and the growth of political institutions. In the subsequent application of the method of evolution to other sciences, the theory of natural selection not infrequently found less favour than that of Lamarck, who early laid emphasis on the effect of use and disuse of habit in species formation and its hereditary transmission. D. taught that habit, though it played a considerable part in some cases in the modification of the constitution and structure of species, has been in its effects largely combined with and overmastered by the natural selection of innate variations, and the interpretation of D. as establishing the creation of new species from the accumulative power of natural selection has since the controversy over hereditary transmission found very general acceptance. One of the subtlest criticisms of D. was that of T. H. Huxley, who, while championing the theory against dogmatism, himself advanced the objection that man, by artificial selection, could not induce varieties of a domesticated animal which were unable to breed with one another, and that until he could do so, variations were not satisfactorily accounted for by natural selection. The difficulty offered by the existence of unity of type, or the constant fundamental agreement in structure in organic beings of the same class, is met by Darwin himself, who thinks the explanation of the unity lies in the

fact of unity of descent. In the field of philosophical speculation, D. would seem to be inconsistent with any teleological conception of the universe, or the theory of a world created out of chaos by the intervention of a Divine Being proceeding on the lines of a coherent and beneficial plan. It substitutes a purely mechanical conception of organic development based on the mere instinct of self-preservation, which is complete of itself except in so far as the spontaneity of the variations and mutual affinities of species is assumed so as to lead to the inference of some innate organising principle. D. is not avowedly concerned with the absolute origin of life or, as was the teaching of Buffon, with the evolution of the primordial germ. Wallace, who worked out the theory of natural selection independently of Darwin, sees in it no necessary inconsistency with teleology, and the existence through-out evolution of an upward guiding principle from without. It may not be impossible, too, to agree with some Ger. philosophers who regard D. as inculcating a new determinism (q.v.), based on the relativity of all moral ideas in harmony with successive stages of social progress.

Nietzsche, too, criticises D. through a denial of the primary importance of the instinct of self-preservation, saying that 'psychologists should bethink themselves before putting down the instinct of self-preservation as the cardinal instinct of an organic being. A living thing seeks above all to discharge its strength—life itself is Will to Power; self-preservation is only one of the indirect and most frequent results thereof.' Huxley, however, acutely criticises the whole theory of evolution by pointing out that all the laws of physical evolution can never aid us in comprehending the origin of mind. Schaefer has put forward a materialistic theory, not entirely original, that life has originated by a process of evolution from non-living elements, and that we may eventually succeed in building up living protoplasm in the chemical laboratory. But he was careful to distinguish 'life' from 'soul', and the genesis of the latter is as much as ever in the region of the transcendental. It may be conceded, and from the most optimistic standpoint, that D. favours a love of the law of nature, not dissimilar from the Stoic conceptions, and replaces current religious emotions by a love of the aesthetic in nature, and a pantheistic conception founded on the belief of the essential identity of man and the external world. It is an axiom that Darwin's work brought about a revolution in human thought, so that, as Osborn says, 'before and after Darwin' will always be the *ante et post urbem conditam* of biological hist., even though the evolutionary idea is so much older—for this idea goes back to the Gk philosophers, and Darwin himself, in *The Origin of Species*, dealt quite fully with the views of his predecessors. Arising out of D. is the recognition of 'emergence' in organic evolution, or, in other words, the recognition of creativity in many of the steps in such evolution. Modern biologists,

while accepting D. as a whole, concur in the view that there is no irrefutable evidence of the transmissibility of 'definite variations,' or changes in living creatures induced by peculiarities in environment. They accept Weismann's theory that these variations have a germinal origin and not an origin from without. Weismann asserts that the germplasm is continuous, that all reproductive cells are produced directly by other reproductive cells, and are not in any true sense the product of the complex organism which carries them, nourishes them, and allows them to multiply. Botanists, however, are not very enthusiastic about Weismann's 'germplasm' theory; and while Darwin himself was prepared to take an ecological view of the evolutionary problem, the neo-Darwinians for the most part are not.

It does not appear that Darwin knew the work of Mendel (pub. in 1865); at all events he took no notice of it, and it was not taken up until the beginning of the present century, when it was more or less simultaneously rediscovered by De Vries, Correns, and Tschermak. Briefly, the result of Mendel's work on the problem of inheritance in plants was to show that inherited characters are dependent on unit factors derived from both parents, which maintain their identity throughout the life of the plant, and separate only when the sex cells (gametes) are formed. Mendel brought to light facts which have been developed by the mutationist school—a mutation being a discontinuous variation, a more or less wide saltation or sport, which differs from the parent form in one or more well-marked characters. Darwin made many observations on such sports or mutations, but he objected to such 'sudden and considerable deviations of structure' as material for evolution, because he was of the opinion that they would be swamped by inter-crossing; but the Mendelian discoveries have shown that this is not necessarily the case. See also BIOLOGY; EVOLUTION; MAN.

See C. Darwin, *On the Origin of Species by means of Natural Selection*, 1859, *The Variation of Plants and Animals under Domestication*, 1868, and *The Descent of Man, and Selection in Relation to Sex*, 1871; T. H. Huxley, *Man's Place in Nature*, 1863; A. R. Wallace, *Darwinism*, 1889; E. Haeckel, *Die Welträtsel*, 1899 (Eng. trans., 1900); S. P. Cadman, *Charles Darwin and other English Thinkers, with Reference to their Religious and Ethical Value*, 1911; Sir J. A. Thomson, 'Influence of Darwinism on Thought and Life,' in *Science and Civilisation*, 1926; J. B. S. Haldane, *The Causes of Evolution*, 1932; J. W. Bews, *Human Ecology*, 1935; J. S. Huxley, *Evolution: the Modern Synthesis*, 1942; R. E. D. Clark, *Darwin: Before and After*, 1948; and T. Dobzhansky, *Evolution, Genetics and Man*, 1955.

Dar'yal, famous gorge and chief pass in the Caucasus Mts, situated in the central part of the range. The R. Terek flows through it. It has been fortified from very remote times; the ruins of fortifications can still be seen. The Georgian

Military Road runs through it from Ordzhonikidze to Tiflis.

Das, Chitta Ranjan (1870-1925), Indian Swarajist leader, *b.* Calcutta, son of Bhubon Mohan D., a solicitor. Called to the Bar at the Middle Temple, 1892. Returned to India, 1893, and practised at the Calcutta Bar until 1921. He first entered the Indian Congress in 1906, and was elected its president in 1921; but before the Congress met at Ahmedabad he was arrested for unlawfully issuing an appeal for 'volunteers,' and he served a sentence of 6 months in prison. He was president next year, at Gaya, and in Dec. 1923 he entered Bengal Legislative Council. In 1924 he was elected first mayor of Calcutta.

Dasent, Sir George Webbe (1817-96), scholar, *b.* island of St Vincent. Educ. at Westminster, London Univ., and Oxford, he was for sev. years in the diplomatic service at Stockholm. From 1845 to 1870 he was an assistant editor of *The Times*. In 1852 he was called to the bar, and from 1853 to 1866 was Prof. of Eng. Literature and Modern Hist. at King's College, London. His pub. include translations of *The Prose of Younger Edda*, 1842; *Popular Tales from the Norse*, 1853; *The Story of Burnt Njal*, 1861; and *The Story of Gisle the Outlaw*, 1866; he also wrote 4 novels. He was knighted in 1876.

Dash, Comtesse de, the pseudonym of Gabrielle Anne de Cisternes de Courteras, Marquise de Poillon de Saint-Mars (1804-1872), Fr. novelist, *b.* Poitiers. She was a woman in fashionable society, and her numerous novels deal principally with love and intrigue. She is said to have written 5 or 6 vols. in a single year, and the list of her novels is accordingly long. *La Pomme d'Ève*, 1853; *Les Galanteries de la cour de Louis XV*, 1861; *Les Aventures d'une jeune mariée*, 1870; and *Les Bals masqués*, 1882, may be mentioned.

Dashava, natural gas fields, richest in Europe, near Droghobych in Galicia (W. Ukraine), the starting point of gas pipelines to Kiev-Moscow and (under construction) Minsk-Leningrad with branches to Vilnius and Riga.

Dashnaksutun, Armenian national revolutionary party with somewhat Populist (see POPULISM) tendencies, founded in 1890 with the aim of liberating Turkish Armenia by means of terrorising Turkish officials, provoking reprisals, and thus making the Armenian question an international issue. The revolutionary character of D., who were supported by the mass of the Armenian pop., led the Russian Gov. to take a series of anti-Armenian measures in Transcaucasia. D. proclaimed and successfully carried out a policy of civil disobedience in 1903-5, forcing the gov. to retract its measures. They retained a Russophile attitude until the Bolshevik revolution in Russia, after which they became the dominant party in the independent Armenian Rep. of 1918-20. See also ARMENIA; ARMENIANS.

Dashwood, Sir Francis, 15th Baron Le Despencer (1708-81), politician, *b.* London, and educ. at Charterhouse. When still a very young man he became notorious for

his riotous living in an age noted for its moral laxity. After making the grand tour, he was given a minor appointment in the household of Frederick, Prince of Wales. He presently became president of the Dilettante Society, and later founded the infamous brotherhood of the Monks of Medmenham, among the members of which were Bute, Sandwich, Wilkes, Thomas Potter, and Paul Whitehead. Entering Parliament in 1741 as an opponent of Wilkes, he was 21 years later appointed by Bute chancellor of the exchequer, but his general incompetence and his ignorance of financial affairs were so great that his tenure of office did not survive Bute's fall in the spring of 1763. In that year the abeyance into which the barony of Le Despencer had fallen was terminated in his favour, and he became premier baron of England.

Dass, Petter (1647-1708), Norwegian poet, *b.* Nord Herø. From 1689 he was par. priest of Alstahaug. His wonderful power of description in verse has led him to be styled the father of modern Norwegian poetry. His most famous poem, *Nordlands Trompet*, is a vivid description of nature and life in N. Norway. He also wrote lyric and religious verse. The collected writings of D. were ed. by Dr A. E. Eriksen, 1873-7. See H. Midbøe, *P. Dass*, 1947.

Dasyurus, genus of carnivorous marsupials placed near to the bandicoot and opossum genera; the species are called dasyures or native cats. They inhabit the Australian region, are nocturnal in habit, and extremely ferocious. The body of the D. is viverrine in form, dark brown and white in colour, and a hallux is sometimes present.

Datames, distinguished Persian general, a Carian by birth, was satrap of Cilicia under Artaxerxes II (Mnemon), but revolted against the king. He defeated the generals who were sent against him, but was at length assassinated, 362 B.C. Cornelius Nepos, who wrote his life, calls him the bravest and most able of all barbarian generals, except Hamilcar and Hannibal.

Date. The D. palm, or *Phoenix dactylifera*, is a tree of the family Palmaceae, cultivated chiefly in warm countries for its fruit. The stem is generally 20 to 30 ft high, and is crowned at the top by leaves which often split and become pinnate. The inflorescence is enveloped in a large spathe when young. The dioecious flowers are in clusters. The fruit contains a stone which causes the embryo in a mass of hard endosperm. The male and female flowers are borne on separate trees, and as it is impossible to distinguish them before the flowers appear they have to be artificially fertilised. No difficulty is found in the cultivation of the D. palm; plenty of sun, light, and sandy rather than rich soil, and a certain amount of water, are the only conditions required. They commence to bear fruit at 8 years old, and continue to do so for more than a century. The D. is a very important article of food in Arabia, where other foods are hard to obtain. It is eaten raw roasted, or ground and

pressed into cakes. The leaves are used for matting, and the wood for any kind of carpentry in which a light species only is required; the stem-fibre is made into ropes. It is largely exported. It is mentioned in the earliest records of the Assyrians and Gks, and the Jews also used it as a symbol of victory.

Date Plum, name given to sev. species of *Diospyros* in the family Ebenaceae. *D. lotus*, the common D. P., or European lotus, has long shining leaves, white flowers tinged with pink, and fruit almost like a cherry. It is really a tropical tree, but has been naturalised and is cultivated in the S. of England, where the fruit is used for preserves. *D. kaki* is the Chinese D. P., or persimmon.

Datis, Median general who, with Artaphernes, commanded the army of Darius in the expedition he sent against Athens, 490 bc. He succeeded in capturing Eretria, but was defeated by the Athenians under Miltiades at the famous battle of Marathon, and had to abandon any further attempt against Greece.

Datolite, mineral composed of basic calcium and boron orthosilicate, $\text{Ca}(\text{BOH})\text{SiO}_3$. It is found as glassy crystals, or as masses with a granular to compact texture. It is colourless or with a tinge of green and may be transparent or opaque. Hardness, 5-5.5; sp. gr., 3.0. It is found in Norway, Scotland, the U.S.A., and Tasmania.

Datum, or **Datus**, anct Thracian tn. on the Strymonic gulf, subject to Macedonia, with gold mines in Mt Pangaeus in the neighbourhood, whence the Gk proverb, a 'Datum of good things.'

Datura (Arab *tutorah*), genus of Solanaceae. *D. stramonium* is the thorn apple. The plant is found on dunghills and in waste places. It is a violent narcotic and is employed in convulsions and *tic douloureux*. When smoked it palliates the symptoms in asthma. *D. tatula* and *metel* are similarly used. From the species *D. sanguinea* the Peruvians make an intoxicant.

Daubenton, Louis Jean Marie (1716-99). Fr. naturalist. After assisting Buffon at the Jardin du Roi, he became curator and demonstrator in the Cabinet of Natural History, and helped to compile the *Histoire Naturelle*. During the revolution he held the chairs of natural hist. and mineralogy. Elected to the Senate, he was seized with apoplexy at his first attendance, and d. shortly after.

Daubeny, Charles Giles Bridle (1795-1867). Eng. chemist, botanist, and geologist. He was prof. of chem., Oxford, 1822; of botany, 1833; and represented the univs. at the first meeting of the Brit. Association, 1831. He travelled largely and made important studies of volcanic action. His numerous works include *Active and Extinct Volcanoes*, 1826; *Introduction to the Atomic Theory*, 1831; and *Trees and Shrubs of the Ancients*, 1865.

D'Aubignac, Abbé, see AUBIGNAC.

D'Aubigné, François, see MAINTENON.

D'Aubigné, J. H. M. and T. A., see AUBIGNÉ.

Daubigny, Charles François (1817-78), Fr. painter. After 2 years' study in Italy he returned to Paris, and his landscapes, of the Barbizon school, were recognised as masterly. His 'Lock at Optevoz' was bought by the state, 1855, and he was made a chevalier of the Legion of Honour, 1859. His finest landscapes, usually of riv. scenes, were painted between 1864 and 1874. His 'Spring-time' is in the Louvre. See Moreau-Nelaton, *Daubigny raconté par lui-même*.

D'Aubonne, Baron, see TAVERNIER, JEAN BAPTISTE.

D'Aubusson, Pierre, see AUBUSSON.

Daucus, a genus of Umbelliferae, is cosmopolitan but for Australia, and in Britain is represented by *D. carota*, the carrot. In its wild state the root of the plant is hard, wiry, and juiceless, but when cultivated it becomes succulent and nutritious.

Daudet, Alphonse (1840-97). Fr. novelist, b. Nîmes. His father, Vincent D.,



ALPHONSE DAUDET

was a silk manufacturer. D.'s early years were not happy owing to the poverty following on the failure of his father's business. In 1856 he went to Alais as an usher to a boys' school, but the life was impossible, and in 1857 he went to Paris to live with his brother Ernest, who was a journalist. He was some time throwing off the depression of his misery as an usher, and the memory of his wretched experiences haunted him. In 1858 he pub. his first vol. of verse, *Les Amoureuses*, and at once obtained employment on *Le Figaro*. Through this post he was made secretary to de Morin, with whom he remained till the latter's death in 1865. During 1866 he pub. *Lettres de mon Moulin*, and in 1868 *Le Petit Chose*, which contained memories of his early life. He collaborated with others for the stage, and wrote *L'Arlésienne*, 1872. In the same year he pub. the first of the immortal *Tartarins*, *Les Aventures prodigieuses de Tartarin de Tarascon*, in which he satirised, or rather burlesqued, his fellow Provençals. In 1874 he wrote his most masterly

work, *Fromont jeune et Risler aîné*, which struck a new note in Fr. literature, the two successive works showing that he could move to laughter and tears. The story of an illegitimate child, *Jack*, followed in 1876. *L'Immortel*, 1888, contained a savage satire on the Fr. Academy, to which he was never elected. His other novels include *Sapho*, 1884, and 2 more Tartarin books, *Tartarin sur les Alpes* and *Tartarin Voyageur*, 1885. His *Trente ans de Paris*, 1878, and *Souvenirs d'un homme de lettres*, 1888, gave a vivid picture of his literary and social life. He wrote some charming children's stories, the best known being *La belle Nivernaise*, 1886. He was a member of the literary circle of Zola, Flaubert, and the Goncourts, although he never went to the extremes of naturalism. His wife, Julia Allard, shared his literary labours, and their marriage was extremely happy. See E. L. M. Daudet, *Mon frère et moi*, 1882; L. Daudet, *Alphonse Daudet*, 1898, *Quand vivait mon père*, 1940, and (ed.) *Lettres familiales*, 1944; Y. Martinet, *Alphonse Daudet: sa vie et son œuvre*, 1940; G. V. Dobie, *Alphonse Daudet*, 1949.

Daudet, Ernest Louis Marie (1837-1921), Fr. author and journalist, b. Nîmes; an elder brother of Alphonse D. He is the author of *La Terreur blanche*, 1878, and *Souvenirs de la Présidence du Maréchal MacMahon*, 1880, historical works of considerable interest; he also wrote a biography of the Princess Lievin (the Princess de Cadignan of Balzac) entitled *Vie d'une ambassadrice*, 1903. His novels such as *Vénus de Gordes*, 1866, never attained the popularity of his brother's works.

Daudet, Léon (1867-1942), Fr. author, the son of Alphonse D. He wrote sev. satires, notably one upon doctors, *Les Morticoles*, 1894, and another upon republican politicians, *Les Parlementeurs*, 1901. Besides political pamphlets, he wrote sev. novels, partly social, partly psycho-analytical. His works also include *Le Voyage de Shakespeare*, 1896; *Les Idées en Marche*, 1896; *Les Deux Étreintes*, 1900; *Souvenirs des milieux littéraires, politiques, artistiques, et médicaux*, 1914-21; *Le Stupide XIX^e Siècle*, 1922; *Panorama de la III^e République*, 1936; and sev. books about his father, Alphonse D. (q.v.).

Daudin, François Marie (1774-1804), Fr. naturalist, b. Paris. He wrote many books on zoology, the best known being a work entitled *Histoire naturelle générale et particulière des reptiles*, 1802-3, a book of considerable value to herpetologists, as it describes many generic and specific forms for the first time.

Daugava, see DVINA.

Daugavpils (until 1893 Dünaburg, then Dvinsk until 1920), tn in Latvia, on the W. Dvina, an important transportation centre. Founded in 1278 by Livonian knights, it belonged variously to Poland and Sweden; from 1772 it was a Russian fortress. It saw much fighting in 1915. It was the cap. of the Latvian prov. of Latgale, and 1952-3 of D. oblast (abolished). Pop. (1956) under 50,000 (1860, 25,000, 1913, 130,000, 1925, 41,000).

Dauglish, John (1824-86), chemist (M.D. 1855), b. London. He invented a process for the manuf. of aerated bread, which was brought into operation in Great Britain in 1859. Carbonic acid gas was evolved in a generating vessel by the action of sulphuric acid on chalk, and after being purified was forced at high pressure into water which was then used with the flour to make the dough. The great object was to lessen the risks incurred during the ordinary process of fermentation by a variable temp., and to ensure certain and uniform results.

Dauin, small tn situated on the is. of Negros, in the Philippine Archipelago. It was formerly called Buglas Is. Pop. 11,208.

Daulatabad, or **Deogiri**, tn in Hyderabad state, India, 10 m. N. of Aurangabad (q.v.). It is noteworthy for a fine 13th cent. fort set on an isolated conical rock some 800 ft high. It has a perpendicular scarp all round some 100 ft high and entrance is possible only through a passage tunnelled through the rock.

Daulis, or **Daulia**, anct tn in Phocis, situated on a lofty hill, residence of the Thracian king Terps, and scene of the tragic story of Philomela (q.v.) and Procne, both of whom are surnamed Daulias.

D'Aulnoy, Baronne, see AULNOY.

D'Aumale, Counts and Dukes, see AUMALE, COUNTS AND DUKES OF.

Daumat, Jean, see DOMAT.

Daumier, Honoré (1808-79), Fr. caricaturist and painter, b. Marseilles. He became a professional lithographer and, in 1831, joined the staff of *La Caricature*, where his scathing caricatures attracted attention, one of king Louis Philippe as Gargantua leading to his imprisonment (1833). He then drew for *Charivari* until his old age, his social caricatures making artist and paper famous. His *Bon Bourgeois* helped to inspire Flaubert's *Bouvard et Pécuchet*. He was also a serious painter of high rank, whose pictures now attract the attention they deserve. Balzac called him a 'Michelangelo under the skin,' though Rembrandt was his model. He painted in dark but not energetic tones scenes of everyday life—'La Blanchisseuse,' 1861 (Louvre), 'Le Drame,' 1858 (Munich), several versions of the railway third-class carriage, and a series of Don Quixote. He became totally blind in later life and was befriended by Corot. See lives by Arsène Alexandre, 1888, and E. Klossowski, 1908; and L. Deltail, *Honoré Daumier, Description de l'œuvre graphique*, 1926-31.

Daun, Leopold Josef Maria, Count von, Prince of Thiano (1705-66), Austrian field marshal, b. Vienna. He was made a colonel during the war of the Polish Succession (1734-5), general in the war against the Turks (1737-9), and field marshal in the war of the Austrian Succession. His over-cautious generalship was frequently criticised.

Daunii, anct name for the inhab. of Daunian, a region of S. Italy in the N. of Apulia. It now forms a part of the Neapolitan prov. of Terra di Bari.

Dauphin, title formerly borne by the eldest son of the king of France, abolished after the revolution of 1830. The childless Comte de Vienne Dauphiné sold his lands in 1349 to Charles, subsequently (1364) Charles V of France, and Charles's eldest son, b. 1368, the future Charles VI, received the Dauphiné and the title of dauphin at his birth. It had originated as a proper name, but had become the title of the count of Vienne Dauphiné by the end of the 13th cent.

Dauphiné, anc. prov. of France, on the SE. frontier between Provence and Savoy, now comprising the depts of Drôme, Hautes-Alpes, and Isère. Its cap. was Grenoble (q.v.). We first hear of it in the possession of the Allobroges, Caturiges, and various Celtic tribes, and then it was taken into the Rom. Empire. Later it became part of the kingdom of Burgundy (q.v.), and thence passed into the possession of the Franks. The Carolingian empire was split up and redistributed, and D. was taken into the second Burgundian empire of Arles. From the 9th to the 12th cents. it changed its entity, being divided into various principalities. The Burgundian succession failed, and it was willed to the Ger. emperor, in whose possession it remained till 1343, when it was given back to France. In support of political freedom a convocation was held at Vizelle in 1778 to protest against the dissolution of the prov. Parliament. The D. Alps form the N. part of the W. Alpine system of Europe, the highest summits being Les Ecrins (13,462 ft) in the dept of Hautes-Alpes, and the Aiguille du Midi (13,075 ft) in Isère. See also DAUPHIN; ALPS.

Dauphinite, see ANATASE.

Daurat, Jean (1508-88), Fr. poet and scholar, b. Limoges. His original name was Dinemandy. From working as a page in the household of Francis I. he became a learned classical scholar and director of the Collège de Coqueret. Here he founded the famous society of young poets, the Pléiade (q.v.), so called after the group of 7 Gk poets of Alexandria, and played an important role in stimulating the young humanists, and revealing to them the treasures of classical literature. In 1556 D. became prof. of Greek at the Collège Royal.

Dauria, see TRANSBAIKALIA.

Davanzati, Chiaro (c. 1230-78), It. lyrical poet, b. Florence. He commenced by writing lyrics in the style of the Provençals and Sicilians, but later he became a follower of Guitton of Arezzo. To this period probably belong his patriotic *canzone*. D'Ancona's *Antiche Rime*, 1875-88, includes all his best work.

Davao, prov. in SE. Mindanao, Philippine Is., producing lumber, rubber, coconuts, and pineapples. Mineral deposits are found here. The cap. is Davao, a shipping centre (pop. 111,263). In the Second World War Jap. forces held out here until late 1945. Pop. 364,859.

Davenant, or D'Avenant, Charles (1656-1714), writer on political economy, eldest son of Sir Win D. the poet. He practised as a lawyer at Doctors' Com-

mons, was commissioner of excise, 1683-9, and inspector-general of customs, 1705-14. He was secretary to the commission which settled the union with Scotland. As an economist he at first showed some free-trade tendencies, but later adopted the orthodox mercantile theory. A complete ed. of his numerous pamphlets and works was pub. in 1771, ed. by Sir C. Whitworth.

Davenant, or D'Avenant, Sir William (1606-68), poet and dramatist, b. Oxford, son of the proprietor of the Crown Inn. The story that Shakespeare was his real father was fostered by D. himself, but there is no certainty about it. At first he was attached as page to various noble households, but the murder of his patron, Lord Brooke, in 1628 left him without means, and he turned to the stage. He wrote the words for some masques of Inigo Jones, such as *The Temple of Love*, 1634; his earlier plays were *The Tragedy of Albovine, King of the Lombards*, 1629; and *The Cruell Brother*, 1630. His best play, a comedy, *The Witts*, was produced in 1636. In 1637 he succeeded Ben Jonson as poet laureate. He was an ardent royalist, and was knighted for bravery at the siege of Gloucester, 1643. He was captured on a mission to Virginia to establish a colony, 1650, and imprisoned, but was released through the good offices of Milton, whose life, it is said, he saved after the Restoration. In the reign of Charles II he took a prominent part in the development of the theatre, especially in the matter of elaborate scenery and stage effects, at his theatre the Duke's in Lincoln's Inn Fields. His later plays and adaptations are of little interest, and his great epic, *Gondibert*, 1651, is dull, except for some brilliant and quotable passages. His shorter lyrical poems, with the title *Madagascar*, 1638, contain some verses that still live. In 1656 he produced the first Eng. opera, *The Siege of Rhodes*, with Mrs. Coleman, the first actress to appear on the Eng. stage. He was buried in Westminster Abbey. See J. Maidment and W. H. Logan (ed.), *The Dramatic Works of Sir William D'Avenant, with Prefatory Memoir and Notes*, 1872-4, and studies by A. Harbage, 1935, and A. H. Nethercot, 1938.

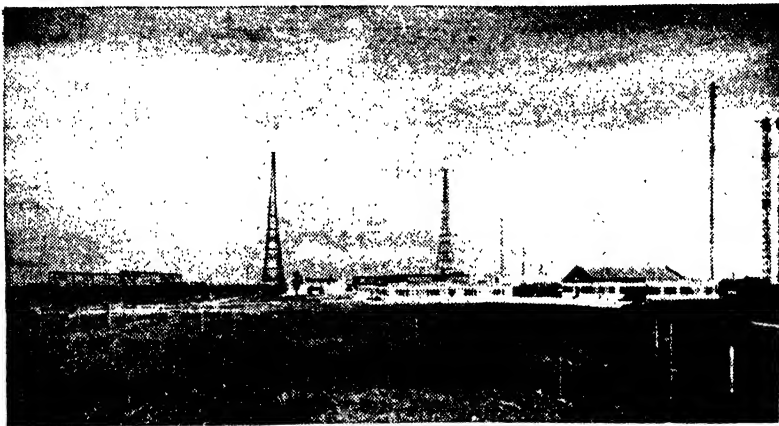
Davenport, Charles Benedict (1866-1944), Amer. biologist at Harvard Univ. He held the position of instructor of zoology from 1893 to 1899, and was subsequently assistant prof. of zoology at Chicago Univ. From 1898 to 1921 he was director of the Marine Biological Laboratory of the Brooklyn Institute, and in 1904 he became director of the station for experimental evolution of the Carnegie Institution. He made valuable contributions to the study of heredity in man and in animals. His chief pub. are *Experimental Morphology*, 1897-9; *Eugenics*, 1910; *Heredity in Relation to Eugenics*, 1911; *Heredity of Skin Color in Negro-White Crosses*, 1913; *The Feebly Inhibited—Nomadism and Temperament*, 1915; *Naval Officers—their Development and Heredity*, 1919; *Body Build and its Inheritance*, 1923. He collaborated with

A. G. Love in exhaustive inquiries into the physical fitness of men drafted for the First World War, and pub. in this connection his *Defects Found in Drafted Men*, 1920.

Davenport, John (1597-1670), Puritan divine, b. Coventry, educ. at Oxford. He was for 14 years a minister in London, and then fled to Holland under Laud's persecution. He went to America, and was one of the founders of the New Haven Colony in 1638, his co-leader being Theophilus Eaton, who became first governor of the colony. D. became pastor of the New Haven Church. He opposed the Half-Way Covenant, and pub. many theological works.

Davenport, city, cap. of Scott co., Iowa, U.S.A., 160 m. E. of Des Moines, on the Mississippi R. opposite the Illinois cities of Rock Island, Moline, and East Moline.

the son of Jesse the Bethlehemite. As the youngest son his business was to guard his father's flocks. Of D.'s introduction to court two accounts are given, one tracing it to his skill on the harp (1 Sam. xvi. 14ff.), the other to his conflict with Goliath. D. quickly rose to a responsible position, but his prowess raised the royal jealousy. Saul gave him his daughter Michal to wife, but then became so threatening that it was only by the help of Jonathan and Michal that D. escaped with his life. D. hastened southward, and after a short stay at Nob settled in the cave (i.e. hill-fortress) of Adullam. Here he gathered a band of some 400 men, but steadfastly refused to take part in any designs on the 'Lord's anointed.' He subsisted on contributions levied in return for protection against the Philistines, Amalekites, and other foes of Israel. Saul, however,



DAVENTRY TRANSMITTING STATION

B.B.C.

It manufs. locomotives, snow ploughs, washing machines, aluminium sheets and plate, foundry products, and food products. St Ambrose College, Marycrest College, and the Palmer School of Chiropractic are here; at D. too are a municipal art gallery, a public museum, and the Tri-City Symphony Orchestra. Pop. 74,550.

Daventry, municipal bor. and tn of Northamptonshire, England. It is situated near the sources of the Nene and Avon, 12 m. W. of Northampton. The manuf. of boots and shoes is carried on, together with light engineering. It is noted in hist. for the fact that in 1645 Charles I stayed there a week, prior to the battle of Naseby. There is an important broadcasting transmitter, erected in 1925, on Borough Hill. Owing to industrial developments the tn is now expanding. Pop. 4200 (1954).

David ('friend' or 'beloved') (1012-972 BC), 2nd king of united Israel, was

pressed him hard, and he had to retreat. His followers now numbered 600, and he placed them at the service of Achish, king of Gath. From him he obtained the lordship of the frontier tn of Ziklag. Meanwhile both Saul and Jonathan fell at Gilboa, and Israel was in chaos. D. moved to Hebron and was soon acclaimed as king by the men of Judah, while the rest of the country remained in the hands of Ishbual (Ishbosheth) and Abner. On the death of Ishbual all the country fell into his hands. He captured the Jebusite stronghold of Jerusalem and made this central but neutral fortress his cap. The Philistines, whose vassal he had been, now attacked him, and he gained many victories. Then followed wars with Moab, Ammon, and Edom, and D.'s success 'united all the tribes from Dan to Beersheba.' During these campaigns occurred the grievous sin, to the results of which must be ascribed so many of the woes of the latter part of D.'s reign

(2 Sam. xi., xii). Absalom, his favourite son, rebelled and died, and so, later, did his son Adonias, jealous of D.'s intention to leave the crown to Solomon. D.'s faults were outweighed by his humility and his penitence. There is no character in the O.T. whom we get to know so intimately (except perhaps Jeremiah), most of our information being derived from contemporary documents full of the personal devotion which he inspired, even in conquered enemies (cf. the Cherethites and Pelethites); the story of the affection between him and Jonathan is the supreme classic of friendship. As the youngest son who fights the giant and reaches the throne, he is the epitome of romance. His statesmanship in conciliating the N., and choosing Jerusalem as his cap. and centre of worship, his loyalty to Saul, his chivalry, his courage and skill in battle, his great artistic genius as a musician, poet or bard, even his over-indulgent love for his sons, and above all his great devotion to the God of Israel shown in the Davidic Psalms, make him the most attractive of all O.T. heroes. The title for the Messiah, 'Son of David,' accepted by Jesus Christ, is a divine tribute to him. See PSALMS; also V. Zappalà, *David and Saul*, 1921; Mildred Duff and N. Hope, *David the Shepherd who became King*, 1926; F. Meyer, *David, Shepherd, Psalmist, King*, 1935.

David, St. bishop of Menevia and patron of Wales. The 10th-cent. *Annals Cambriae* record him as having d. c. 601. There is also record of his having presided at two Welsh synods. These meagre historical facts have formed the basis of a wealth of legend. St. D.'s Day is 1 Mar.

David I (1084-1153), king of Scotland, youngest son of Malcolm Canmore and St Margaret, sister of Edgar Atheling. He married Maude, daughter of Waltheof, earl of Northumbria, and through her gained the earldom of Huntingdon. On the death of his brother, Edgar of Scotland, in 1107, he received the S. dist. with the title of earl of Cumbria; in 1124 his brother, Alexander I, d., and D. gained the whole kingdom. As an Eng. baron he swore fealty to Matilda, daughter of Henry I., and invaded England on her behalf against Stephen. He was defeated near Northallerton at the battle of the Standard in 1138. After this he returned to Scotland, and devoted himself to the political and eccles. reform of his kingdom. He founded 5 bishoprics and sev. monasteries; Melrose Abbey, Newbattle Abbey, and Holyrood were endowed out of the crown lands. He consolidated his realm, and built up the feudal kingdom of Scotland. The country's trade and agriculture prospered under his rule. Offences against the king's peace were judged by officials appointed by the Crown.

David II (1324-71), king of Scotland, b. Dunfermline, fifth son of King Robert Bruce and Elizabeth de Burgh. He succeeded to the throne in 1329, and was crowned at Scone in 1331. He had been married in 1328 to Joan, daughter of Edward II of England. The victory

of Edward III and Edward Balliol, the pretender to the Scottish throne, at Halidon Hill in 1333 drove D. and his queen to flee to France. He returned in 1341, and in the interests of France invaded England in the absence of the army in France, but was defeated and taken prisoner at Neville's Cross (1346). He remained a prisoner in England for 11 years. By the treaty of Berwick the Scots undertook to pay 100,000 marks as ransom and D. returned to Scotland, but the country was too poor to pay, and much of the sum was later remitted. He secretly offered to treat with Edward III on the basis of making him or his son successor to the Scottish crown. The nomination of the duke of Clarence was refused by the Scottish Parliament, but D. continued secretly making arrangements with Edward.

David, Félicien (1810-76), Fr. composer, b. Cadenet, Vaucluse, learnt music at the cathedral of Aix-en-Provence and from 1825 at a Jesuit college, and began to compose early. He entered the Paris Conservatoire in 1830, travelled in the East in 1833-5, and after his return began to make a name as a composer of quasi-oriental music. He wrote symphonies, chamber music, and songs, but his most famous work was the descriptive symphony *Le Désert*, with which only the operas *La Perte du Brésil* and *Lalla-Roukh* (after Thomas Moore) could compete, although he wrote other picturesque works showing original invention and sensitive orchestration.

David, Gerard (c. 1460-1523), Flemish painter, b. Oudewater, Holland, the last great painter of the Bruges school. Among his many famous and beautiful pictures are the great altar-pieces, of which a fine example, 'The Marriage of St. Catherine,' is in the National Gallery, London. His fine 'Baptism of Christ' and the subjects painted for the Hall of Justice, depicting the arrest and punishment of Sisamnes, are in the Musée Communal, Bruges. See life by J. Weale, 1895; E. von Bodenhausen, *Gerard David und seine Schule*, 1905.

David, Jacques Louis (1748-1825). Fr. painter, b. Paris, son of a well-to-do Parisian merchant, who was killed in a duel when D. was only 9. His earliest instruction was obtained from his uncle, Boucher; afterwards he studied under Vien. His first ambition was to obtain the Prix de Rome, but it was not till after he had made sev. attempts that he was successful, gaining it in 1774. Then he followed his master, Vien, to Rome, where he spent 6 years, chiefly in copying the antique and studying the old masters. When he returned to France his 'Belshazzar,' 1780, secured his admission to the academy. Between 1775 and 1785, inspired by Rome and guided by Vien, he evolved the strikingly neo-classic idiom for which he is famous. He did not invent the neo-classic style but he was its greatest exponent. With his 'Andromache grieving over the dead Hector' he was admitted a full Académicien. His fame was greatly enhanced with 'The Oath

of the Horatii,' 1785—a picture in which he was deliberately rousing in the masses a civic and patriotic sense. At the time of the revolution he became an enthusiastic representative for Paris in the convention and he was also made a member of the committee of public safety. After Robespierre's death he was twice imprisoned and in danger of his life. In 1804 Napoleon appointed him court painter, and made him commander of the Legion of Honour, but when the Bourbons were reinstated he was banished as a regicide to Brussels, where he remained till his death. D. was in his time both the leader of the Fr. school and the most famous artist in Europe. His portraits are now highly esteemed. There are 24 of his pictures in the Louvre, the best known being 'Madame Récamier,' 'The Coronation of Napoleon,' and 'Oath of the Horatii.' His 'The Dead Marat' is at Brussels. See lives by Th. Thoré, 1843, E.-J. Dolecluze, 1855, R. Cantinelli, 1930, and André Maurois, 1948.

David, Pierre Jean (1789-1856), Fr. sculptor, known as David d'Angers, b. Angers, of extremely poor parents. Overcoming family opposition he went to Paris, and by hard work gained a prize at the École des Beaux Arts, and in 1811 the Prix de Rome. He was 5 years in Rome, studying under Canova. He became famous for his busts and medallions. His chief works are a monument to the Gk liberator, Botzaris, the pediment of the Pantheon in Paris, and the statue of 'Philopoemen,' now in the Louvre.

David, Sir Tannatt William Edgeworth (1858-1934), geologist, b. near Cardiff, South Wales, emigrated to Australia 1882. He became assistant geological surveyor for the gov. of New South Wales. In 1890 he was appointed prof. of geology and physical geography at Sydney University. He was a member of the 1896 and 1897 expeditions to Fanafuti, Ellice Is. and, in 1907, of the Shackleton expedition to the Antarctic. D. served in France during the First World War as one of the five geologists employed by the Allies. His main work was the exploration of Australia's salient geological features. These he recorded in his map, pub. with a vol. containing explanatory notes in 1932, and in a more comprehensive book *The Geology of the Commonwealth of Australia*, which was completed after his death by W. R. Browne. See E. W. Skeats, 'Some Founders of Australian Geology,' in the *Geological Magazine*, Jan. 1922; M. E. David, *Professor David*, 1937.

David, city and cap. of Chiriquí prov., W. Panama, on the Río D., in a fertile valley. D. has shoe, soap, textile, sugar, timber, and tanning industries; its seaport is at Pedregal (4 m. S.). Pop. 16,200.

Davidia, a monotypic genus, family Cornaceae, *D. involucrata*, the Chinese Handkerchief tree, being esteemed in gardens for its small flowers surrounded by two large white bracts in May.

David, Thomas William Rhys (1843-1922), Eng. oriental scholar. He was the prin. Eng. authority on Buddhism and

Buddhist literature. Among his works are *Buddhist Sutras*, 1881; *Buddhism*, 1889; *Sacred Books of the Buddhist*, 1889; and *Buddhist India*, 1903.

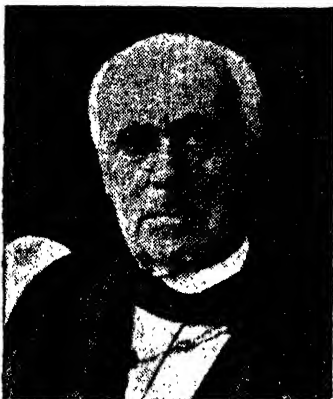
Davidson, Andrew Bruce (1831-1902), theologian, b. Kirkhill. In the Free Church the advanced critics who filled the college chairs owed their inspiration to D., who went to the Heb. chair in New College, Edinburgh, in 1863. In 1865 he was made prof. of oriental languages, and he was one of the O.T. revisers of the A.V. of the Bible. He pub. various works on Heb. grammar, syntax, etc.

Davidson, George (1825-1911), astronomer, b. Nottingham. When still a boy he went to America, and in 1845 joined the U.S. coast survey. He also engaged in surveying work from Maine to Texas, and on the Pacific coast.

Davidson, John (1857-1909), poet and dramatist, b. Barrhead, Renfrewshire. Educ. at Greenock Academy and Edinburgh Univ., he was a master in Scottish schools, and in 1890 came to London. His early poetical plays, *Bruce*, 1868, *Smith: a Tragedy*, 1888, and *Scaramouch in Nazos*, 1889, attracted no attention, nor did that strange example of his original genius, the romance *Perseid*, 1890. His first success was with *Fleet Street Eclogues*, 1893, 2nd series, 1896; followed by *Ballads and Songs*, 1894. His novels of this period include *Baptist Lake*, 1894, and *A Full and True Account of the Wonderful Mission of Earl Lavender*, 1895. He wrote other poetic plays, such as *Godfrida*, 1898, and *The Theatrical*, 1905. His satiric and didactic works include *The Testament of a Vintsector*, *The Testament of a Man Forbid*, 1901, and *The Testament of an Empire Builder*, 1902. His last book of verse, *Fleet Street and other Poems*, was pub. in 1909, and a dramatic work *God and Mannion* in 1907. An embittered and thwarted genius, he was drowned near Penzance under circumstances pointing to suicide. See H. Fineman, *John Davidson: a Study of the Relation of his Ideas to his Poetry*, 1916.

Davidson, Randall Thomas, Lord (1848-1930), 96th archbishop of Canterbury, b. Edinburgh; educ. at Harrow and Trinity College, Oxford; ordained 1874, and was domestic chaplain to Archbishop Tait, whose daughter Edith he married in 1878. In 1882 he was made dean of Windsor and domestic chaplain to Queen Victoria. He was bishop of Rochester 1891, of Winchester 1895, and succeeded Archbishop Temple of Canterbury, 1903. He was president of the Pan-Anglican Congress, 1908, and of the subsequent Lambeth conference, and crowned George V, 1911. He will be remembered for his practical conception of the great opportunity offered to the Anglican communion in the empire. His W. Canada Fund had a marked effect on the religious life of the prairie provs. In the First World War he occupied himself with the promotion of that spiritual renewal which the strain of the times seemed to demand. He estab. important committees to deal with intellectual problems, with worship,

with social questions, and with church organisations. As a result of these and similar activities, the 'Life and Liberty' movement came into existence as a focus for the younger men of all schools of thought; and with this movement came the Enabling and Constitution Act, which he piloted through the House of Lords and under which the Church Assembly (q.v.) and its subordinate councils were set up. The creation of the assembly provided him, in his later years, with an opportunity exactly suited to his temperament and gifts; and under his guidance legislation embodying sound practical reforms was presented to Parliament. He regarded any real *rapprochement* between Canterbury and the Vatican as outside practical politics. The Lambeth conference of 1920 encouraged inquiry into the possibilities of religious reunion, and it was argued by some that reunion



'The Times'

LORD DAVIDSON

must begin with a movement towards reunion with the Rom. Church; but in the ensuing conversations at Malines with Cardinal Mercier he perforce denied to the discussions the character of negotiations, and the essential obstacles to such reunion remained unassailed. Yet, if these conversations achieved no practical result, D.'s vigilant interest in all that concerned the Orthodox churches not only drew those churches closer to the Anglican communion, but also brought them into contact with other forms of European Christianity. D. was recognised as the champion of E. Christians, whether the oppressor was Bolshevik or Turk. He preached at Geneva on the eve of the third assembly of the League of Nations. His last years brought severe disappointments; his efforts of many years to solve, by settlement, the difficult religious problem in elementary education were at length nullified by eccles. factions. A still greater disappointment came with the

rejection by the House of Commons of the 1927 and 1928 Prayer Book measures; but it would seem probable that, like Cranmer, he had excessive faith in a new Prayer Book as a means of composing differences and restoring discipline within the church. Soon after the second defeat of the Prayer Book measure in 1928 he resigned. The king bestowed a barony upon him, an honour almost without precedent in the instance of one who had been a spiritual peer. He wrote the *Life of Archbishop Taill with Canon W. Benham*, 1891, and ed. the *History of the Lambeth Conferences*, 1889. See life by G. K. A. Bell, bishop of Chichester, 1935.

Davies, Arthur E. (1862-1928), Amer. painter, trained under Dwight Williams and at the Art Institute, Chicago. His 'Spring's Renewal' and 'The Breath of Life' were first shown in New York, and stamped him as a notable adherent of the romantic school. 'The Girdle of Ares,' which was bought by the Metropolitan Museum of Arts, was first exhibited in Philadelphia; and thereafter other notable pictures were 'Visions of the Sea' and 'Children of Yesteryear,' the latter of which is now in the Brooklyn Museum. In 1916 D. was awarded the first W. A. Clark prize and the Corcoran medal.

Davies, Ben (1858-1943), Welsh tenor, b. Pontardawe, near Swansea. He started life in trade, then went to London to study at the Royal Academy of Music. Began by singing in Balfe's *The Bohemian Girl*, and took part in the operas of Goring Thomas, Mackenzie, and Stanford. He sang in the long run of Celler's *Dorothy* in London, and then in Sullivan's *Ivanhoe* at D'Oyly Carte's Eng. opera house. For some years he was a member of the Carl Rosa company. He sang in both Eng. and It. operas. Leaving the stage he took to oratorio and concert singing, and for many years was the leading Brit. tenor. Those who were present at the celebration of his 80th birthday will remember the perfect ease of style with which he still sang.

Davies, Clement (1884-), politician, educated at Llanfyllin, Monmouthshire, and Trinity Hall, Cambridge, and called to the Bar in 1909. Since 1929 D. has been Liberal M.P. for Montgomeryshire, and was leader of the parl. Liberal party 1945-56.

Davies, Mrs David, see KENNEDY, MARGARET.

Davies, Fanny (1861-1934), pianist, b. Guernsey. She went to Leipzig to study music, and became a pupil of Reinecke and also of Oscar Paul. While staying at Frankfurt she studied with Clara Schumann. Played at all the great European festivals, accompanied Joachim, and after her first appearance in 1885 was for many years one of London's popular favourites and an exponent of the true Schumann tradition. But she was also interested in modern piano music, especially Debussy and the Sp. and Czech schools.

Davies, Sir Henry Walford (1869-1941), organist and composer, b. Oswestry; choir boy at St George's Chapel, Windsor, under Sir Walter Parratt; assistant organist to

the latter, 1886-90. Studied at Royal College of Music, 1890-4; pupil of Parry, Rockstro, and Stanford. Organist, St Anne's, Soho, 1891-8; at Temple Church, 1898-1919, with which church his work as organist and choirmaster is specially associated; and at St George's Chapel, Windsor, 1927. Appointed prof. of music at the univ. of Wales, Aberystwyth, 1919, and chairman of the National Council of Music in connection with that univ. He succeeded Elgar in 1934 as Master of the King's Music, and in 1935 organised a great choral concert at the Albert Hall to mark George V's jubilee. He was a prolific composer, especially of vocal music. Probably his best known piece, however, is the *Solemn Melody* for organ and orchestra. His most important contribution to the musical life of his time was less in composition than as teacher, adjudicator, and lecturer.

Davies, Hubert Henry (1876-1917), playwright, b. Woodley, Cheshire. Educ. at private schools, he went in 1893 to San Francisco, and became a journalist and writer of sketches. Returning to England, 1901, he produced plays in London: *Mrs Goring's Necklace*, 1903; *Cousin Kate*, 1903; *Cynthia*, 1904; *Captain Drear on Leave*, 1905; *The Mollusc*, 1907; *Lady Epping's Lawsuit*, 1908; *Bevis*, 1909; *A Single Man*, 1910; *Doormats*, 1912; and *Outcast*, 1914. Work as hospital orderly in France broke his health. He was recuperating at Robin Hood's Bay when his overcoat and stick were found near the cliff edge. He was never seen again.

Davies, John (c. 1565-1618), poet and writing-master, b. Hereford. Said to be the best penman of his age, he numbered Prince Henry among his pupils. His poems are somewhat prolix and tedious, his chief work being *Microcosmos*, 1603, which is based on Sylvester's trans. of the *Semaines* of du Bartas. His *Scurvie of Folly*, 1611, has verses addressed to numerous contemporaries, including Shakespeare. Others of his works are *Wittes Pilgrimage*, 1610, *The Muscs Sacrifice*, 1612, and *The Writing School-master*, 1633. His complete works were ed. by Dr. A. B. Grosart, 1878.

Davies, or Davis, Sir John (1569-1626), poet and lawyer, b. Tisbury, Wiltshire. He was educ. at Winchester and Oxford, and called to the bar in 1595. He seems to have enjoyed a reputation for wit, and wrote many epigrams as well as poems. James I took him into favour, and made him solicitor-general of Ireland in 1603, and 3 years later attorney-general, when he was created serjeant-at-arms. He was appointed lord chief justice shortly before his sudden death. In conjunction with Sir Robert Cotton he founded the Society of Antiquaries. His best known works are the philosophic poems *Orchestra*, in which the world is exhibited as a dance, 1596, and *Nosce Teipsum*, a poem on human learning and immortality, 1599. His works were ed. by Dr. A. B. Grosart, 1869-76. He must not be confused with John Davies of Hereford (q.v.).

Davies, John (1679-1732), classical scholar and critic, b. London. His father was a merchant of Cambridge, his mother being a daughter of Sir John Turtton, a judge of the king's bench. He was educated at Charterhouse School and at Queens' College, Cambridge, and subsequently became president of the college. D. edited several of Cicero's philosophical writings, but his work is marred by too free use of emendation.

Davies, Sir Louis Henry (1845-1924), Canadian jurist and Liberal statesman, b. Prince Edward Is., son of Hon. Benjamin D. He was called to the bar in 1867, solicitor-general, 1869, 1871-2. Leader of opposition in Legislative Assembly, 1873. Premier and attorney-general, Prince Edward Is., 1876-9. Elected to dominion Parliament, 1882. Minister of marine and fisheries, 1896-1901. On commission at Quebec, 1898-9, to settle questions with U.S.A. In London on Behring Sea business, 1899 and 1900. Judge, Canadian supreme court, 1901; chief justice, 1918. Privy Councillor, 1919.

Davies, Mary (1855-1930), mezzo-soprano, b. London. Of Welsh parentage, she was trained as a public singer, and in 1880 created the part of Margaret in the Eng. version of Berlioz's *Faust*. Took part in most of the Eng. musical festivals, and for many years sang at the London ballad concerts as their leading soprano.

Davies, Sarah Emily (1830-1921), feminist, b. at Southampton, daughter of a clergyman, and educ. at home. She was secretary of a committee (1864) demanding access of girls to Cambridge local examinations—a demand granted in 1865; and was honorary secretary of a movement (1867) inaugurating Hitchin College, rehoused at Gilton (q.v.), 1873, D. being mistress there for 2 years. From 1870 to 1873 she was a member of the London School Board. She agitated with success (1874) for London Univ. degrees for women.

Davies, Thomas Witton (1851-1923), Heb. scholar; 1880-91, prof. of classics, Heb., and mathematics at Baptist College, Haverfordwest; 1892-9, lecturer in Arabic and Syriac at Univ. College, Nottingham; 1899-1906, prof. of Heb. and O.T. literature at the Baptist College, Bangor; afterwards, and till 1921, prof. of Semitic languages in N. Wales Univ. Amongst his numerous publs. are *Oriental Studies in Great Britain*, 1892; *Magie, Divination, and Demonology among the Hebrews and their Neighbours*, 1898; *The Scriptures of the Old Testament*, 1900; *Century Bible: Psalms*, vol. ii, 1906; *Welsh Political and Educational Leaders*, 1907; *Ezra, Nehemiah, and Esther*, 1909; *Outstanding Literary and Human Factors in Life*, 1911; and *Bel and the Dragon*, 1913.

Davies, W. D., generally known as Karri Davies, b. at Karridale, Australia. He went to S. Africa and came into public notice during the agitation of the Uitlanders in the Transvaal against the Kruger regime, and was a member of the Transvaal Reform Committee; he was arrested with other members on the failure

of the Jameson Raid in 1897. Sentenced to 2 years' imprisonment and a heavy fine, he and Woods-Sampson alone refused to appeal against the sentences and were retained on the liberation of the other prisoners. He fought in the S. African war (1899-1902), was wounded at Elandslaagte, and was present at the relief of Mafeking.

Davies, William Henry (1871-1940), poet, b. Newport, Monmouth, of Welsh parentage. Apprenticed to a picture-frame maker, he gave up this trade and became a tramp and pedlar. At the age of 22 he went to America and worked at fruit-picking and as a cattle-man. He learned the hobo's art of 'train-jumping,' but while trying this at Renfrew, Ontario, he slipped and his right leg was severed at the ankle. Returning to England he started to write, keeping himself by peddling laces and pins and singing in the streets. His first book of verse, *The Soul's Destroyer*, 1905, was sent to various literary people, who befriended him. Bernard Shaw helped him to become known and Edward Thomas lent him a cottage at Sevenoaks, where he wrote *The Autobiography of a Super-Tramp*, 1907, which made him famous. In 1911 he was awarded a Civil List pension, and in 1926 the Univ. of Wales made him an LL.D. His books of verse number a score, and his *Collected Poems*, 1943, contains over 600 pieces. The contrast between his life and his work is striking, for his lyrics are like the most delicate of Elizabethan verse. He also wrote another autobiographical work, *Later Days*, 1925. See T. Moulit, *W. H. Davies*, 1934.

Da Vinci, see LEONARDO DA VINCI.

Davis, Bette (1908-), Amer. actress, b. Lowell, Massachusetts, educ. Cushing Academy, Mariandene School of Dancing, and John Murray Anderson Drama School. She made her debut in *Broadway*, and after other Broadway shows entered films in *The Man Who Played God*, 1932. She twice won the Academy Award for the best actress: in 1935, for *Dangerous*, and in 1938, for *Jezebel*. She has given many other outstanding dramatic performances in such films as *Of Human Bondage*, *Dark Victory*, *All This and Heaven Too*, *The Letter*, *Now Voyager*, *The Corn is Green*, and *The Little Foxes*.

Davis, Cushman Kellogg (1838-1900), Amer. political leader and lawyer, served during Civil war in the Federal Volunteers; became prominent in state politics as a Republican; from 1874 to 1876 he was governor of Minnesota; from 1887 U.S. senator. Had great influence on Amer. foreign policy, and signed the treaty of Paris after the Sp.-Amer. war.

Davis, Elmer Holmes (1890-). Amer. writer and radio news commentator, b. at Aurora, Indiana, U.S.A. Rhodes scholar, Queen's College, Oxford; B.A., 1912. On editorial staff of *Adventure*, 1913-14, and *New York Times*, 1914-24. News commentator, Columbia Broadcasting System, 1939-42; and Amer. Broadcasting Co. from 1945. Director, Office of War Information, U.S. Gov., 1942-5. President of

council of the Authors' League of America, 1939-41. Pub. *Times Have Changed*, 1923; *Friends of Mr Sweeney*, 1925; *Strange Woman*, 1927; *Giant Killer*, 1928; *Morals for Moderns* (short stories), 1930; *Love Among the Ruins* (short stories), 1935; and *Not to Mention the War*, 1940.

Davis, Henry William Carless (1874-1928), historian, educ. at Weymouth College and Balliol College, Oxford. He was a lecturer at New College, 1897-1899; at Balliol from 1899. In 1925 he became regius prof. of modern hist. at Oxford. D. was an outstanding medievalist. His pubs. include *Charlemagne*, 1900; *England under the Normans and Angevins*, 1905; and *Medieval Europe*, 1911.

Davis, Henry Winter (1817-65), Amer. political leader, b. Annapolis, Maryland. Served in the National House of Representatives as a Know Nothing, 1855-60. After Lincoln's election he became a Republican; he opposed Lincoln's plan for the reconstruction of the S. states, and issued with Benjamin Wade of Ohio the 'Wade-Davis manifesto,' which denounced Lincoln. In 1860 declined nomination to the vice-presidency. Chairman of committee of foreign affairs, 1863-5. Pub. *The War of Ormuz and Ahriman in the Nineteenth Century*, 1853, against the slave-holders.

Davis, Jefferson (1808-89), only president of the confederate states during the Amer. Civil war, b. Fairview, Kentucky. D.'s father Samuel was of Welsh extraction. After attending schools in Kentucky and Mississippi, he studied at old Transylvania College in his native state 1821-4, and then attended the U.S. Military Academy, from which he graduated in 1828. He remained in the U.S. Army for 7 years, and distinguished himself as a young officer in the Black Hawk Indian war of 1833. Marrying a daughter of Col., afterwards Gen. and President, Zachary Taylor, he bought a cotton plantation in Mississippi, where he made a comfortable fortune. He lost his first wife of fever after 3 months, and afterwards married Varina Howell of Mississippi. For a long time thereafter he devoted himself to his books and his plantation. As he treated his own slaves kindly and gave them a large measure of self-government, he became a convinced supporter of African slavery, really believing that all slave-holders treated their human property in as benevolent a manner as he did. He was elected to the National House of Representatives in 1845, but on the outbreak of the war with Mexico resigned this post and went to battle as colonel of a volunteer regiment, the 'Mississippi Rifles.' In the army led by his father-in-law. He served with distinction at the battle of Monterey, and on 22 Feb. 1874 became something like a national hero because he saved the day at the battle of Buena Vista. In the same year he was elected to the U.S. Senate, and was made chairman of its committee on military affairs. He ran for governor of Mississippi in 1851, but was defeated.

President Franklin Pierce made him secretary for war in his Cabinet in 1853. D. energetically improved the army, and pushed the construction of coast defences and the survey of the far W. for future railway lines. Once more elected to the Senate in 1857, he became the leader of the S. democrats. The election of Lincoln as president in the fateful campaign in 1860 caused D. to burn his bridges. In the Senate he passionately asserted the right of the S. slave-holding states to secede from the union and form a separate nation. When Mississippi formally seceded and joined the confederacy, D. fondly hoped to lead Mississippi troops in the coming armed conflict, but to his dismay the S. congress on 9 Feb. 1861 chose him as provisional president of the confederacy. In a later election by the people he was again chosen president, 22 Feb. 1862. In the war D. blundered by retaining the services of generals who had been shown to be unfit for their task. Press and public began to turn against him, and Gen. Lee might have been able to seize supreme power if loyalty to the gov. had not been his first and his last word. When Richmond, the cap., fell into Union hands, D. moved first to Danville, Virginia, thence to Greensboro, N. Carolina, and was finally captured near Irwinville, Georgia, 10 May 1865. Manacled and harshly treated, he was confined in Fortress Monroe, Virginia. Sev. efforts were made to connect him with the assassination of Lincoln and with the harsh treatment of prisoners at Andersonville, but without success. Two indictments for treason were found against him and for two years he was refused trial or bail. This cruelty aroused the sympathy of the people of the S., who looked upon D. as a martyr to their cause, and in large measure reinstated him in the esteem he had lost on account of his blunders. Finally (1867) he was admitted to bail; many of his former political opponents stood as sureties, while Charles O'Connor, a leader of the New York Bar, volunteered to defend him. O'Connor moved to quash the indictment on which D. was brought to trial, but the court of 2 judges was divided. The matter was then certified to the Supreme Court, but no decision of which there is record was ever announced by that tribunal, and meanwhile the administration dismissed the prosecution and discharged D., who went to Canada. He benefited from the general amnesty of 1868 and returned to 'Beauvoir', Mississippi, where he spent the rest of his life quietly, refusing to take any part in politics. He d. suddenly in New Orleans. He wrote sev. books, one of which was *The Rise and Fall of the Confederate Government*, 1881. See also UNITED STATES, *History*. See Mrs Varina Howell Davis, *Jefferson Davis, a Memoir*, 1890; lives by F. H. Alfriend, 1868; E. A. Pollard, 1869; W. E. Dodd, 1907; Allen Tate, 1929; and Robert McElroy, 1937; also W. E. Dodd, *Statesmen of the Old South*, 1929; R. W. Patrick, *Jefferson Davis and His Cabinet*, 1944.

Davis, John (1550-1605), navigator,

considered the father of Arctic discovery, b. Stoke Gabriel, near Dartmouth, Devon. In his early days he made various expeditions around Greenland, and after suffering many reverses of fortune succeeded in pushing through the strait which bears his name to Baffin Bay. His next voyages were in the S. Seas. In 1597 he took a Dutch vessel to the E. Indies, and had trouble in Madagascar. He then undertook a short expedition as major of the fleet. He wrote *The Seaman's Secrets*, 1594, and *The World's Hydrographical Description*, 1595. See life by C. R. Markham, 1889.

Davis, Sir John, see DAVIES.

Davis, Mortimer Barnett (1866-1928). Canadian financier, president of the Imperial Tobacco Company of Canada and chairman of the Canadian Industrial Alcohol Company, besides being a director of the Royal Bank of Canada and a member of sev. other great commercial concerns in the dominion. He was often styled 'the tobacco king of Canada,' and gave munificent amounts to philanthropic concerns.

Davis, Richard Harding (1864-1916). Amer. novelist and journalist, b. Philadelphia, son of L. Clarke D., editor of the *Public Ledger*, and Rebecca Harding D., novelist. Throughout the Sp.-Amer. war he acted as war correspondent. He served in the same capacity during the Boer war in S. Africa. He wrote sev. books relating to these campaigns, as well as a large number of novels; also a play entitled *The Dictator*, produced at the Comedy Theatre, London, May 1905. In 1914 he was in Mexico as war correspondent of the *New York Tribune*. Later he went to Belgium. He wrote *With the Allies and Somewhere in France*, 1915.

Davis, Thomas Osborne (1814-45). Irish poet and journalist. He attached himself to the party of Daniel O'Connell (q.v.), and worked on the committee of the Repeal Association, 1841. In conjunction with J. B. Dillon and Charles Gavan Duffy he started the weekly paper *The Nation*, and his best work appeared in this, comprising some fine lyrics such as the *Lament for Owen Roe O'Neill; The Battle of Fontenoy*, etc., and historical sketches. Trouble arose between O'Connell and the Young Ireland party, as they were called, and D. was attacked on the plea that he was anti-Catholic, but he retained a strong influence on his party until his early death from scarlet fever. See Sir C. Gavan Duffy, *Thomas Davis*, 1896.

Davis, William Morris (1850-1934). geographer and geologist, son of Edward Morris, b. Philadelphia. Educ. at Harvard Univ., he taught geology and geography there in 1876 and 1878 respectively. His prin. pubs. are *Elementary Meteorology*, 1894; *Physical Geography*, 1899; *Elementary Physical Geography*, 1902; *The Triassic Formation of Connecticut and Geographical Essays*, 1909; *A Handbook on Northern France*, 1918; and numerous articles in scientific journals.

Davis Cup, presented by Dwight F. Davis of St Louis in 1900 for competition

among teams of players from different lands. Conditions for D. C. were submitted by United States L.T.A. to the Lawn Tennis Association in London on 16 Jan. 1900. The regulations have since been revised and the competition is now called the International Lawn Tennis Championship. It is a knock-out men's tennis tournament between nations. Singles and doubles are played; ties are drawn for. The challenging nations play off among themselves for the right to challenge the champion nation, and the challenge tie is played in the country of the champion nation. The U.S.A. has held the cup 18 times, Great Britain 9 times, Australasia 14 times, and France 6 times during the years 1900-56. During the Second World War Australia retained the D. C. being unchallenged after their victory in 1939.

Davis Strait separates N. America and Greenland, joining Baffin Bay with the Atlantic Ocean. The name is derived from John Davis, who was the first to explore it in 1585. It is from 160 to 180 m. across at the narrowest point, and the greatest depth is about 950 fathoms.

Davison, William (c. 1541-1608), secretary to Queen Elizabeth I. Of Scottish birth, and a friend of the Earl of Leicester, he was employed on various diplomatic missions by the queen. He became a member of Parliament, a privy councillor, and in 1586 assistant to the queen's secretary, Walsingham (q.v.). He brought the warrant for the execution of Mary Queen of Scots for Elizabeth's signature. Afterwards, the queen alleged that D. had gone beyond his instructions and acted over-hastily. D. was heavily fined and imprisoned for 2 years. After his release he was made clerk of the treasury.

Davison, Clinton Joseph (1881-), Amer. physicist, b. Bloomington. Educ. at Univ. of Chicago and Princeton Univ., 1908-11. Instructor in physics, Carnegie Institute of Technology, Pittsburgh, 1911-17. Member of technical staff of the Bell telephone laboratories, New York city, 1917-46. Known for researches in electricity, magnetism, and radiant energy. Discovered (with L. H. Germer) the diffraction of electrons by crystals, 1927. Comstock prize, 1928; Elliot-Cresson medal, 1931; Hughes medal of the Royal Society, 1935. Shared Nobel Prize for physics with George Paget Thompson, 1937. Member of the National Research Council, 1928-31 and 1933-6. Pub. papers on thermionics, radiation, electron diffraction, and electron lenses in scientific journals.

Davitt, Michael (1846-1906). Irish Nationalist politician, b. co. Mayo. His father having been evicted in 1851, the boy started life in a Lancashire cotton mill, but in 1857 a machinery accident resulted in the loss of his right arm. In 1865 he joined the Fenians (q.v.), and 3 years later was arrested on the charge of importing fire-arms into Ireland, and was sentenced to 15 years' penal servitude. Released after 7 years he returned to Ireland in 1879, and helped Parnell (q.v.) to start the Land League, with the result

that he was re-arrested, but released on ticket-of-leave again in 1882. He was then elected to Parliament as Nationalist member for Meath, but as a convict was not allowed to sit. He was one of the respondents before the Parnell Commission (1888-90), and spoke for 5 days in his defence. He was elected to Parliament on 3 subsequent occasions, but never sat for any length of time. He wrote a good deal and was bitterly anti-Eng. and anti-clerical.

Davos, mt valley in the canton of the Grisons, Switzerland. Its 2 prin. villages are **Davos-Platz** and **Davos-Dorf** (with 11,000 mainly Protestant inhab.), which are 5015 ft above sea level. They are situated 40 m. E. of Chur. The valley is sheltered from the cold winds and enjoys brilliant sunshine, and these facts being noted by Dr Spengler in 1865, he advocated the place for consumptive patients, and the valley has since become a famous winter resort for those suffering from the disease. There are many hotels and sanatoria, and the winter sports attract many visitors.

Davout, Louis Nicolas, Duke of Auerstädt and Prince of Eckmühl (also **Davout** and **Davoust**) (1770-1823), marshal of France, and one of the most brilliant of Napoleon's generals: b. at Annoux. He went through the Rhine campaigns of 1794-5 and on the expedition to Egypt with Bonaparte. After the Marengo campaign he became general of div., and when Napoleon became emperor was created a marshal of France, was in command of the 3rd Corps of the Grande Armée at Austerlitz, and with a single corps won the victory of Auerstädt against the main Prussian Army. He was made Duke of Auerstädt in 1808. After being governor of Poland he took part in the war with Austria (1809), and was made Prince of Eckmühl. He organised the army for the Russian campaign, throughout which he commanded the 1st Corps, and in 1813 he sustained the siege of Hamburg. He retired on the first restoration, joining Napoleon on his return from Elba, when he became minister of war, and was left in command of Paris after Waterloo. His stern discipline made the troops he commanded the most trustworthy in Napoleon's armies, and his severity and extortion in conquered territories were in execution of the emperor's orders. At the second restoration he was deprived of all his titles, but in 1817 they were restored to him.

Davy, Sir Humphry (1778-1829), chemist, b. Penzance, Cornwall. His father was a woodcarver. He was educ. at Truro, studied medicine and set up as a doctor, devoting his leisure to chemical research. The results of his experiments were pub. by Dr Beddoes, who made him superintendent of the Pneumatic Institute. This led to his appointment to the post of assistant lecturer of chem. to the Royal Institution, London, where his brilliant scientific success, his versatility, and originality brought him recognition and fame, which spread abroad. In 1807 he delivered a remarkable Bakerian lecture

on 'Some Chemical Agencies of Electricity,' embodying the results of experiments he had been making for some time. It revolutionised the scientific world, and France bestowed on him the Napoleon prize of 3000 francs. In these experiments he discovered sodium and potassium. He planned the ventilation of the House of Lords, and in 1812 was knighted by the prince regent, the same year marrying Mrs Apreece, daughter and heiress of Charles Kerr of Kelso. With Faraday he visited the Continent, where he met leading contemporary scientists: Ampère, Cuvier (qq.v.), Chevreul and Humboldt (qq.v.). On his return to England his investigations into the causes of fire damp resulted in his invention of the miners' safety lamp. Numerous honours followed. He was made baronet and president of the Royal Society. Failing health necessitated his leaving England, and he d. at Geneva.



SIR HUMPHRY DAVY
An engraving after a painting by
Sir Thomas Lawrence

His collected works were ed. by his brother, John D. (1839-41). See lives by J. A. Paris, 1831; J. Davy, 1836; Sir T. E. Thorpe, 1896; and P. A. Guye, 1907.

Davy, John (1763-1824), musician, b. near Exeter, and d. London. He wrote music for many stage pieces and numerous songs, the best known of which is 'The Bay of Biscay.'

Davy Jones, a sailors' term personifying the depths of the sea in their evil aspect as the grave of drowned men. The second word is probably a corruption of 'Jonah,' from the biblical story, and 'Davy' may have been added as the natural Christian name for a well-known Welsh surname. 'Davy Jones's Locker' is a further elaboration of the figure.

Davy Lamp, form of safety lamp, used especially in mines, which will allow an illuminant to be burnt in it without danger of explosion from the explosive gases often generated in the passages of

the mine. The principle of these lamps is that sufficient air should be allowed to enter to allow the light to burn, while at the same time the flame or gases of combustion should not escape at a temp. which would cause ignition of the explosive gases in the mine. Sir Humphry D. in 1816 invented the lamp which has since then borne his name. It consists of a cylindrical lamp, to which air is admitted at the bottom, and covered by a cage of iron wire gauze, the mesh of which was at that time of 789 apertures to the sq. in. This standard has been reduced. The lamp is in 2 parts, locked together so that once lighted the gauze cannot be removed. Many improved lamps have been made on this system, especially to prevent the inflammable gases, travelling at high velocities, being forced back into the lamp.

Dawes, Charles Gates (1865-1951), Amer. brig.-gen. of engineers and financial expert; b. Marietta, Ohio, son of Gen. Rufus R. D., Comptroller of the currency, 1897-1902. In First World War maj. of engineers in France from 1917, became member of Allied Purchasing Board, in 1918 brig.-gen. Appointed by Reparations Commission to preside over committee for examining Germany's capacity for reparation payments, which sat in Paris Jan.-April 1924, and whose report of 19 April submitted so-called Dawes Plan (q.v.). In 1924 elected vice-president U.S.A. for term 1925-9. Received the Nobel peace prize in 1925. Ambas. to the court of St James, 1929. Pub. *A Journal of the Great War*, 1930. *Reparations*, 1939, and *Journal as Ambassador to Great Britain*, 1939.

Dawes, William Rutter (1799-1868), astronomer, b. London, who made a name by his observations and measurements of the double stars. He made an early observation of the dusky ring of Saturn, 1850, and in 1855 won the gold medal of the Royal Astronomical Society.

Dawes Plan. This was the name given to the scheme evolved by the committee of experts set up to investigate the financial conditions in Germany and to settle the amount of money which Germany could pay as reparation for war damage—such amount to be without prejudice to the balancing of the Ger. budget and the stabilising of Ger. currency. In 1923 the Ger. Gov., forced by severe economic pressure, applied to the Reparations Commission under Act 234 of the treaty of Versailles for an investigation of Ger. economic resources and her capacity to pay. This application was followed by a notification to the effect that for the time being Germany was unable to pay for deliveries in kind. The application was granted and the Reparations Commission decided to appoint 2 committees: (1) the Dawes Committee to investigate and report as above; (2) the McKenna Committee to inquire into, and report upon, the flight of Ger. capital abroad since the armistice. The Dawes Committee was presided over by C. G. Dawes, U.S.A., and the other members were O. D. Young, U.S.A.; R. M. Kindersley and J. C.

Stamp, Great Britain; J. Parmentier and E. Allix, France; A. Pirelli and F. Flora, Italy; E. Francoqui and M. Houtard, Belgium. The gist of the committee's report (which became the basis for the eventual settlement) may be given in these words: 'Beyond the fixed annuity which shall be normally 2½ milliard gold marks there will be no longer any other liabilities arising out of the treaty of Versailles or the world war.' The normal annuity of 2½ milliard gold marks was to be obtained from the following sources:

1,250 million from customs duties and consumption taxes
660 million from the railways
290 million from the transport tax
300 million from industry
2,500 million

And the normal annuity was to be reached in the fifth year. The actual payments made were:

	gold marks (millions)
1924 5	1,000
1925 6	1,220
1926 7	1,500
1927 8	1,750
1928 9	2,500

The standard figure was reached on 1 Sept. 1928, and an additional payment became liable after the close of the year 1928-9 calculated on an index of prosperity, based on certain trade returns, budget receipts, and expenditure, etc. In 1930 the D. P. gave way to the Young Plan (q.v.), but in 1934 Germany's financial position so deteriorated that the Ger. Gov. declared a moratorium on both loans. Thereupon the Brit. Gov. announced that it would be necessary to initiate an exchange clearing arrangement by which holders of the loans might be paid with interest, and an exchange agreement was eventually concluded. See C. Bergmann, *The History of Reparations*, 1927.

Dawkins, Sir William Boyd (1838-1929), geologist who became in his day the doyen of Eng. archaeologists. In 1862 he joined the Geological Survey of Great Britain, and in 1874 became prof. of geology at Manchester. His researches in connection with the cave-dwellers of prehistoric times had great influence on prehistoric studies in Britain. His *Cave Hunting*, 1874, and *Early Man in Britain*, 1880, are classics of his period, and they may still be read with profit as a record of the difficulties with which early students had to contend. His prin. geological pub. was *British Pleistocene Mammalia*, 1866-87. D. had much to do with the Kentish coal-field and the proposed Channel tunnel.

Dawley, urb. dist. of England, in Shropshire, situated on Shropshire Union Canal, and in the Wellington div., 4 m. SE. of that place. Coal and iron are worked. Pop. 8390 (1954).

Dawlish, in and watering-place in Devon, England, 11 m. from Exeter; a stream called Dawlish Water runs through its centre. D. is a great resort for sea-

bathers and invalids throughout the year. Pop. 7512.

Dawn, see TWILIGHT. The colours of the sunrise at D. are not so warm as those of sunset, since the air is clear and there is less diffusion of light rays. The order of D. colours is deep red, then orange, gold, and clear bright yellow, the reverse order of the sunset colours. The duration of D. is shorter than that of twilight.

Dawson, Charles (1886-1938), antiquary, amateur geologist, and, by profession, a solicitor. His name will be remembered for his discovery, between the years 1911 and 1913, of what was known as the Pilt-down man which has recently been shown to be a forgery. See PILTDOWN MAN.

Dawson, Christopher (1889-), philosopher and historian, educated at Trinity College, Oxford. Lecturer in the hist. of culture, Univ. College, Exeter, 1930-6; Forwood lecturer in the philosophy of religion, Liverpool, 1934; Gifford lecturer (Edinburgh), 1947 and 1948. Pubs. include *Progress and Religion*, 1929; *The Making of Europe*, 1932; *The Judgement of the Nations*, 1943; *Religion and Culture*, 1948; *Religion and the Rise of Western Culture*, 1950; *Understanding Europe*, 1952; *Medical Essays*, 1954.

Dawson, George (1821-76), nonconformist divine, b. London. He entered the Baptist ministry and in 1843 went to Tickmansworth, removing in 1844 to Mount Zion, Birmingham. His unorthodox views led him to resign, and his followers built the Church of the Saviour for him. Here for nearly 30 years he drew a large number of people by his eloquence and freedom of thought. Carlyle and Emerson were among his friends.

Dawson, George Mercer (1849-1901), geologist, b. Pictou, Nova Scotia, son of Sir John Wm D. (q.v.). He held the post of geologist and naturalist to the N. Amer. boundary commission (1873), served on the staff of the Geological Survey of Canada, becoming director in 1895. He had charge of the Yukon expedition in 1887, and Dawson City is named after him. He was one of the Behring Sea commissioners (1891), and went to Paris on the Arbitration Board. He wrote *The British Colonies in America*, 1892, and many scientific papers and reports.

Dawson, Henry (1811-78), painter, b. Hull. Had little art training but gained reputation in N. of England for landscape and marine painting. He moved to London in 1850 and had some success with pictures showing the influence of Turner, e.g. his 'Greenwich' and 'Wooden Walls.'

Dawson, Sir John William (1820-99), geologist, b. Pictou, Nova Scotia. He studied at Edinburgh Univ., and on settling down to educational work in Nova Scotia undertook a geological survey of the country, publishing his results in *Acadian Geology*, 1855. The same year he became prof. of geology and principal of McGill College and Univ., Montreal, and in 1862 was elected F.R.S., becoming the first president of the Royal Society of Canada. In 1884 he was

knighted, and in 1893 was nominated emeritus principal, prof., and honorary curator of the Redpath Museum. D. did great service to geology and education. He took a leading part in the movement for the improvement of women's education, and brought the whole school system of the prov. to a higher level of efficiency. Among his numerous works are *Archæia*, 1858; *Story of the Earth and Man*, 1872; *Origin of the World*, 1877; *Fossil Men*, 1878; *Egypt and Syria*, 1885; *The Meeting-place of Geology and History*, 1894; and *Relics of Primeval Life*, 1897.

Dawson City, city of the Canadian Yukon dist. and centre of the Klondike goldfields. The tn was founded in 1896 at the time of the first gold rush, and though partially destroyed by fire in 1899 became a well-established mining city, with places of entertainment and hotels. It enjoys the services of a fleet of riv. steamers and telegraphic communication connecting it with the upper and lower Yukon. In spite of the climate, which tends to extremes, wheat, barley, and oats have been successfully cultivated there. The pop., which has been extremely fluctuating, dwindled from 30,000 in 1898 to 783 in 1951 owing to the exhaustion of the Klondike goldfields.

Dawson of Penn, Bertrand Edward Dawson, first Baron and Viscount (1864-1945), court physician, son of Henry D., F.R.I.B.A., of Purley, Surrey. Educ. at Univ. College and the London Hospital. M.D., London, 1893; F.R.C.P., 1903. Physician-extraordinary to King Edward VII, 1907-10; to King George V, 1910-14. Early became known as an authority on gastric affections—wrote *The Diagnosis and Operative Treatment of Diseases of the Stomach*, 1908. During First World War he was captain R.A.M.C. (T.F.), commandant 2nd London General Hospital, and consulting physician in France. Col. A.M.S. and honorary member Army Medical Advisory Board, 1918, and chairman of the special committee of the Medical Research Council on tuberculosis in wartime. Raised to peerage, 1920; Privy Councillor, 1929. President of the Royal College of Physicians, 1931, and of the British Medical Association, 1932-3, 1943-5. Created a viscount, 1936. Biography by F. Watson, 1950.

Dax (Lat. *Aqua*), Fr. spa, cap. of an arron., in the dept of Landes, on the Adour. Its warm, sulphurous waters have been looked upon as a cure for rheumatism since Rom. times. There are remains of Rom. ramparts. It has a trade in wine, timber, and resin, and manufs. preserves and espadrilles. Pop. 14,100.

Day, Clarence Shephard (1874-1935), Amer. essayist, b. New York. Educ. at Yale, he afterwards fought in the Sp.-Amer. War and contracted arthritis, which left him a bed-ridden invalid. He wrote humorous philosophical essays which were collected as *God and my Father*, 1932; *Life with Father*, 1935; *Life with Mother*, 1937; and *Father and I*, 1940.

Day, Francis (1820-89), ichthyologist,

b. Maresfield, Sussex, who wrote some standard works on the fish life of India and Great Britain. He became interested in this study while surgeon at Madras. His chief works are *The Fishes of Malabar*, 1865; *Fishes of India*, 1875-88; and *The Fishes of Great Britain and Ireland*, 1880-84.

Day, John (1574-1640), dramatist, b. Norfolk. He became a sizar of Caius College, Cambridge, whence he was expelled for theft. He collaborated successfully with Dekker, Haughton, and others between 1598 and 1608. His best-known work is an allegorical masque, *The Parliament of Bees*, 1641, in which all the characters are bees. He also wrote a pleasing comedy, *Humour out of Breath*, 1608. His complete works were ed. by A. H. Bullen, 1881. See A. C. Swinburne, *Contemporaries of Shakespeare*, 1919.

Day, Thomas (1748-89), author, b. London. He inherited in early infancy £200 a year, the greater part of his father's estate. He was educ. at Charterhouse and Oxford, and was called to the Bar, but did not practise. He was eccentric, and educ. 2 girls with the idea of making one his wife, but the experiment failed. With his friend Richard Lovell Edgeworth (q.v.) he made the acquaintance of Jean Jacques Rousseau in Paris. Literature, architecture, politics, and agriculture in turn had his attention. He married Esther Milnes, an heiress. In support of the abolition of the slave trade he wrote a poem, *The Dying Negro*, 1773. He was killed when thrown by a colt near Wargrave. His *Sandford and Merton*, 1783-9, is a typical example of the pedagogic novel. D., like Rousseau, advocated more enlightened methods in education, and offered models of stories and improving talks with children, which were intended to make them realise the value and entertainment of science and virtue. See Sir S. H. Scott, *The Exemplary Mr Day*, 1935.

Day (O.E. *daeg*, Ger. *tag*) usually means the time during which the sun is above the horizon, the period during which it is below the horizon being known as night. In astronomy a D. is reckoned as the time taken by the earth to complete a rotation, but it is necessary to define the object which is used as a reference for this rotation. If a star is used for this purpose the interval between 2 successive passages of the star over the meridian of any place is called a *sidereal day*, which is the true period of the earth's rotation. A *solar day* is the interval between 2 successive transits of the sun's centre over the meridian and is about 4 minutes longer than the sidereal D., but varies in length for the following reasons. Owing to the ann. revolution of the earth round the sun, the sun's apparent motion among the stars is in an easterly direction at the rate of about 1° a D., so that it appears to move through the 12 signs of the zodiac (q.v.) in a year. The earth's orbital motion is not uniform owing to the eccentricity of its orbit (see SOLAR SYSTEM), being a maximum and minimum at perihelion and aphelion respectively (see

APSIDES), and this would be responsible for inequalities in the length of the solar D. Another important consideration is the fact that even if the sun's orbital motion were uniform, its corresponding motion in right ascension would not be uniform because of the inclination of its orbit—the ecliptic—to the equator. Obviously a clock which kept accurate time would not always indicate the same instant when the sun crossed the meridian, and the adjustment is made as follows.

Astronomers postulate a fictitious mean sun moving uniformly in a circle and completing its circuit in the same time as the actual sun does. The connection between the 2 suns can be expressed by saying that the right ascension of the mean sun is equal to the mean long. of the true sun. If a clock keeps correct mean time the equation of time is equal to the sun time—or apparent time—minus the clock time and is zero on or about 15 April, 15 June, 1 Sept., and 24 Dec. About 11 Feb. it is $-14^m 20^s$, and about 4 Nov. it is $16^m 24^s$. These dates fluctuate slightly around those given but never depart far from them. It is easy to verify the discrepancies between clock time and the time when the sun is on the meridian, but it must be borne in mind that the former should be corrected to give mean local time which is faster than G.M.T. by 4 minutes for each degree E. of the (Greenwich meridian and 4 minutes slower for each degree W. of this. The length of the sidereal D. is $23^h 56^m 04.091^s$ mean solar time, and that of a mean solar day is $24^h 03^m 56.555^s$ sidereal time.

Day Lily, popular name for the liliaceous genus *Heimerocallis*, common to Europe and Asia. *H. flava* is a yellow-flowered species cultivated in Britain for its sweet scent, and *H. fulva*, origin doubtful, is a species once given to cattle for fodder.

Day of Atonement (Yôm Hakkippurim) is the holiest day in the Jewish year, and is observed with complete rest from all labour, abstinence from all food and drink, in self-examination and penitence. Yôm Kippur is always the 10th day of the 7th month (Tishri), and the fast begins at sunset on the 9th day, lasting until the evening of the 10th.

Dayaks, see DYAKS.

Dayfly, or Mayfly, see EPTHEMEROPTERA.

Daylesford, agric. tn in Victoria, Australia, 76 m. NW. of Melbourne, a holiday resort with mineral springs.

Daylight Saving. To Wm Willett (1856-1915), a Chelsea builder, belongs the credit for the introduction of the D. S. scheme into England, although his suggestions put forward in 1907 were held up to ridicule. The idea of summertime was first mooted in America by Benjamin Franklin, though its practice is purely an outcome of the First World War. In 1916 Germany instituted a D. S. scheme for purposes of light and fuel economy, and this led to the Summertime Act of Britain being passed on 17 May 1916. On Sunday, 21 May, the clocks throughout the country were for the first time put

on an hour in advance of Greenwich time for the whole of the summer months. Other countries throughout Europe followed suit, and America put the scheme to trial in 1917.

Although originally a war measure, D. S. was considered to have so many advantages that by a series of Acts of Parliament it was continued in England, Col. Lambert Ward being its earnest champion in the House. The royal assent was given to the Summertime Act, making it a permanent measure, on 7 Aug. 1925.

Officially summertime begins at 2 a.m. on the day following the 3rd Saturday in April, unless that is Easter Day, when it becomes the day following the 2nd Saturday of April. It terminates at 3 a.m. (or 2 a.m. Greenwich time) on the day following the 1st Saturday in Oct. During the Second World War the necessity for economising fuel and light, coupled with the inconvenience of the black-out against air raids, led to the beginning of Brit. summertime in 1940 from 25 Feb. and in 1941-4 from 1 Jan. to 31 Dec.; in 1945 the period was reduced to 9 months. Double summertime (i.e. 2 hrs. in advance) was in force during the summer months of 1941-5 and again in 1947.

The number of min. that clocks are moved forward varies from 20 min. in Sarawak and Ghana to 60 min. in Great Britain, Ireland, France, and most other countries. The actual date on which clocks are moved forward is not standard for all countries that have adopted the expedient of D. S.

European countries have used the scheme, abandoned and revived it from time to time, and in June 1930 the Soviet Union introduced it into Russia. In America some of the states favour it, while others refuse to entertain it. The opposition to the scheme comes mainly from agriculturists, who find it inconvenient to begin milking, harvesting, and other work an hour earlier, and from miners and hospital nurses. Mothers state that under D. S. their young children cannot go to sleep early enough in the bright daylight of the summer evenings with the result that the children are tired in the mornings—some educational authorities support this view. Wm Willett d. the year before his idea was put into operation.

Days of Grace, see BILL OF EXCHANGE.

Dayton: 1. City, cap. of Montgomery co., Ohio, U.S.A., on Great Miami R. at mouth of Mad R., 50 m. N. by E. of Cincinnati. It is a leading centre of aviation research and produces cash registers, refrigerators, aeroplane parts, etc. In 1913 D. suffered a destructive flood which brought the estab. of a flood control dist. It was the first large city to adopt the city manager system. Points of interest: univ. of D., D. Art Institute. Pop. 243,900.

2. A city of Tennessee, co. seat of Rhea co., Pop. 3190. In 1925 a teacher of science in the high school was found guilty of having violated a state law

prohibiting the teaching in schools supported by the state of any theories that man is descended from the lower animals. Wm Jennings Bryan, who was briefed by the state of Tennessee for the prosecution, *d.* at D. a few days after the trial. D. is the seat of the Wm Jennings Bryan Univ.

Daytona Beach, popular holiday resort of Florida, U.S.A., on the Atlantic coast, with a motor-racing track on the hard white beach. It is the seat of the Bethune-Cookman College. Pop. 30,187.

D'Azara, Felix, *see* AZARA, DON FELIX DE.

D'Azeglio, *see* AZEGLIO.

D.D.T., *see* DICHLORODIPHENYLTRICHLOROETHANE.

De Aar, tn of Cape Prov., S. Africa, one of the prin. railway junctions of S. Africa, centre of large livestock fairs, with a healthy climate. It is rapidly expanding. White pop. 4192.

Deacon (Gk *diakonos*, an attendant minister), an order in the Christian Church, whose offices and duties have varied greatly in different places and at different times. They are traditionally derived from the Seven (Acts vi.), although the Seven are never specifically called D.s in the N.T., or indeed in any surviving text until the end of the 2nd cent. Allusions to the diaconate, however, occur in the pastoral epistles, and with the development of the monarchical episcopate the D. became peculiarly attached to the bishop. The chief functions of the primitive D., as we may gather from the story of St Laurence, archdeacon of Rome in the 3rd cent., were the care of the poor, the collection and distribution of alms, and personal attendance on the bishop. In time these functions were lost or absorbed by the minor orders, and the D. was left merely a particular part in the church service. In the Lat. and Anglican churches the diaconate is rarely a permanent office, but is considered a step to the priesthood, whereas in the E. it retains more of the old character. In certain Protestant bodies, such as the Presbyterians, the title of D. is given to a layman who has charge of finances, etc. *See Catholic Encyclopaedia*; H. B. Swete, *Early History of the Church and Ministry*, 1918.

Deacon of a Trade, temporary president of certain incorporated bodies in Scotland. These presidents represented their different trades or crafts in the various tn councils before the Burgh Reform Act of 1834. This Act deposed them from their position as official members, but still permitted them to regulate the business affairs of the crafts when appointed by election. *See also* DEAN OF GUILD.

Deaconess, one of an order of women set apart for special service in the Christian Church. In Rom. xvi. 1, and 1 Tim. v. 9 et seq., we find traces of the beginnings of this order, and at the time of the *Apostolic Constitutions* (q.v.) it formed a distinct part of the Church's organisation, and as such is mentioned in the canons of Nicaea and Chalcedon. Though D.s were ordained in much the same way as

deacons, there is no trace in their duties of any sacerdotal function. In the W. Church the order was condemned at sev. councils from the 5th cent. onward, and fell entirely into abeyance during the Middle Ages. It has recently been revived in sev. of the reformed Churches, e.g. the Anglican and Presbyterian.

Dead, Book of the, collection of magic spells, written on papyrus and buried with the dead in anc. Egypt. Knowledge of these spells was considered essential for happiness after death, although the idea began to creep in that this might be obtained as a reward for a good life. Thus as Osiris had been tried and declared 'true of voice, so when a dead man aspired to life after death he was thought to be judged by Osiris who was the ruler of the dead. A scene of the judgment was often included in the B. of the D., with the heart of the dead man being weighed against Truth represented by a feather. Tho'th recording the result and a monster waiting to devour the heart if not true.

Dead-nettle, popular name of sev. species, of the genus *Lamium* and family Labiatae, because of their resembling the stinging-nettles of the genus *Urtica*. *L. album*, white D., *L. purpureum*, red D., *L. moluccifolium*, intermediate D., *L. hybridum*, cut-leaved D., and *L. maculatum*, spotted D., are found wild in Britain.

Dead Sea (Lat. *Lacus Asphaltites*, Arabic *Buhr Lul*, Sea of Lot), scripturally



E.N.A.

THE DEAD SEA

In the background are the mountains of Judaea

called Salt Sea, Sea of the Plains, Sea of the Arabah, is a lake lying between Israel and Jordan. Its length is 46 m. and its greatest breadth $9\frac{1}{2}$ (average 84) m. Area 393 sq. m., of which 285 sq. m. are in Jordan. The long oval of the lake is unequally divided by the El Lisan peninsula, of loose calcareous formation. N. of the peninsula the greatest depth is 1278 ft. S. of that it is 3 to 12 ft deep. It

receives the Jordan and 6 other rivs., but has no outlet, the surplus water being carried off by evaporation. The water is intensely salt, with a sp. gr. one-sixth greater than ordinary water. It is surrounded by steep cliffs of bare limestone, rising to a height of 6000 ft. and masses of sulphur exposed by periodically occurring earthquakes lie on its borders. There is a considerable business in the exploitation of its salt deposits, and potash, bromine, magnesium, etc. There is a phosphates factory at Sodom.

Dead Sea Apple, see APPLE OF SODOM.

Dead Sea Scrolls, see SCROLLS OF THE LAW.

Deadly Nightshade, see NIGHTSHADE.

Deadman's Handle, device attached to the control gear of an electric train (or lift) which ensures that the train is automatically brought to a standstill if the driver releases his grip through sudden illness. The device is in the form of a knob, which switches off the power and applies the brakes should the handle be released when on a running notch. A similar device in the form of a treadle is used on diesel-electric trains.

Dead's Part, in Scots law, the remaining portion of the movable estate which alone may be bequeathed by will. Where the deceased leaves a widow and no children the widow takes one-half as her *jus relictae*, and the other half is D. P. If he leaves a child or children and no widow, half goes to the issue as their *legitime* and half is D. P. If he leaves widow and children, one-third is D. P., the residue going equally to the widow and children. If he dies childless and unmarried every part of the estate is D. P. The same principles apply in the case of a wife leaving movable estate. The D. P., if undisposed of, devolves on the next of kin.

Deadwood, co. seat of Lawrence co., S. Dakota, U.S.A., in the extreme W. of that state. It is the trading centre for the gold, silver, lead, and tin mines of the Black Hills. It was founded in 1876, and has some buildings of architectural interest. The graves of famous Westerners, Wild Bill Hickock, Calamity Jane, Preacher Smith, and Deadwood Dick are here. Pop. 3288.

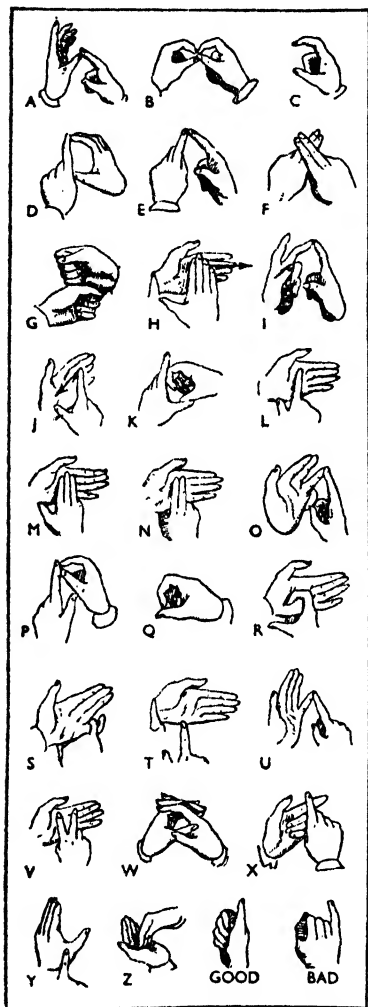
Deaf and Dumb, or Deaf-mute. Deaf-mutism or deaf-dumbness in the sense in which it is used in this article denotes (1) the congenital deafness which arises from some original malformation of the ear and which is always accompanied by dumbness; (2) deaf-dumbness attributable to post-natal causes. Acquired deaf-dumbness, which for the most part follows on some febrile disease in very early life, is of importance from the dactylogical standpoint, but in cases where deaf-mutism has occurred later in life it is obvious that the subject may well have learnt the arts of speech and writing before his affliction, and for that reason does not present the same problem to educators as the congenital deaf-mute. Complete deafness is by no means essential as a cause of complete dumbness; a small amount of deafness may well eventuate in dumbness. Aetiological inheritance is a potent

cause of deaf-mutism; the intermarriage of deaf-mutes and consanguineous marriages are mainly responsible for its production. The prin. causes of non-congenital deafness are those which produce some inflammatory affection of the middle ear. The most prolific sources are scarlet fever and, in a lesser degree, meningitis, measles, fevers, catarrhs, abscesses, small-pox, and erysipelas. It frequently happens that mental disorder is in some way connected with deafness, and the importance of an efficient means of education is apparent from the fact that D. and D. children, if uneducated, have perforce to be classed as mentally retarded. A morbid condition of the mind must almost certainly eventuate where the deaf-mute, to however great an extent he may be susceptible to external impressions, is utterly unable to formulate coherent ideas from never having had his intellectual faculties developed by communication with other, unafflicted human beings.

Denmark, in 1817, was the first country to introduce compulsory education of deaf children. In 1890 the Education of Blind and Deaf-mute Children (Scotland) Act was passed, followed, in 1893, by a similar Act for England and Wales, making elementary education of the deaf compulsory. The 1944 Education Act made secondary education compulsory. There are schools in almost every other country in the world, although in some cases, notably China, Japan, India, and countries in S. America, the provision made is altogether inadequate. In regard to the instruction of the D. and D., it is to be noted that these instructed include for the most part persons whose vocal organs are perfect, but who from deafness are ignorant of the way to articulate the sounds of speech. Again the pupils comprise many who are not completely deaf. Deafness occurs in every degree and in some cases amounts only to an insensibility to the sharper notes of sound. This fact is carefully borne in mind by teachers when considering individual cases. But of course dactylogy or the manual communication of ideas is a science invented mainly in the interests of the more or less completely deaf, who, from never having heard a word spoken, are for that reason unable to use their vocal organs for speech. To such a person any language is a foreign language, and this has always been strongly impressed on all teachers of the D. and D.

Many of the early systems of teaching were faulty from the very ignorance of this important fact, e.g. the celebrated Abbé de l'Epée estab. through dactylogy and articulation some connection in the mind of the pupil between certain methodical signs and the language of their country, but it was by no means estab. that he effected a subjective connection between those signs and the ideas which they were intended to represent. Nevertheless he attained considerable success, and his principles were carried further by his successor, the Abbé Sicard, and the basis of his teaching in signs is that of the chief modern systems. Signs are the natural

language of the D. and D., but the attainment through signs of abstract thinking and conceptions is impossible unless a clear distinction is kept in mind between



British Deaf Times

TWO-HANDED ALPHABET

explaining a language and expressing it. The thoughts must first be awakened, and generally by signs as the most or only natural method; and when awakened those thoughts must be shaped in lan-

guage by some manual alphabet or form of writing. Down to the 16th cent. there was next to no serious effort in the direction of instructing the D. and D. It was the common assumption that instruction by means of language was limited to those who could hear. In England shortly before the pub. by Dalgarno in 1680 of his treatise, the art of instruction of the D. and D. was advanced by John Bulwer and Dr Wallis. Contemporaneously with these, D. and D. philologists, Montans, van Helmont, and Amman, were occupied with its study in Holland; and in Germany, though later, Kerger, Arnoldi, and Heinicke were devoting attention to the subject. It was in France, however, that the greatest strides were made, as indeed was the case in the instruction of the blind (*see BLIND*), and the work of de l'Épée and Sicard, however incomplete, cannot be overestimated. In England, after Dalgarno's time, the art slumbered for many years. It was revived by Henry Baker, the naturalist, and in the middle of the 18th cent. Thomas Braidwood opened an academy in Edinburgh. Braidwood's success was remarkable. He opened another school in Hackney in 1783, and his sons opened other schools in Edinburgh in 1810 and Birmingham in 1825. The first public school for free instruction of the D. and D. was opened in Bermondsey in 1792, and of this school Dr Watson, nephew of Thomas Braidwood, was head instructor for 37 years. With the development of a more enlightened social system the days have long since passed when the duty of instructing the D. and D. was left to individual effort alone. The Elementary Education Acts, 1870 to 1891, make provision for the compulsory elementary education of defective children, including in that term the deaf. The London County Council makes special provision for deaf children, having 6 day schools for the wholly deaf, 5 for the hard of hearing, and 3 residential schools. There are also centres where evening classes in lip-reading are held. The total number of deaf children in attendance at schools throughout England and Wales is not much more than 4000, in Scotland about 700.

Societies and institutions in England for the welfare of deaf-mutes include the Royal School for D. and D. Children, Margate, and the Royal Association in aid of the D. and D., and the National Institute for the Deaf. There is a national college of teachers of the deaf (blind and deaf school) at Stoke-upon-Trent.

The close of the First World War brought serious hardship to many officers and men who had lost their sense of hearing by war service, 33,791 being discharged on account of deafness (the numbers were fewer in the Second World War). On their behalf the Deafened Ex-Service Men's Fund was founded in 1919, with H.Q. at 23 Queen Anne's Gate, S.W.1.

Methods of Instruction. Where there is sufficient hearing the instruction may be auricular, but experience does not point to any great success in this method. Where the afflicted are completely deaf

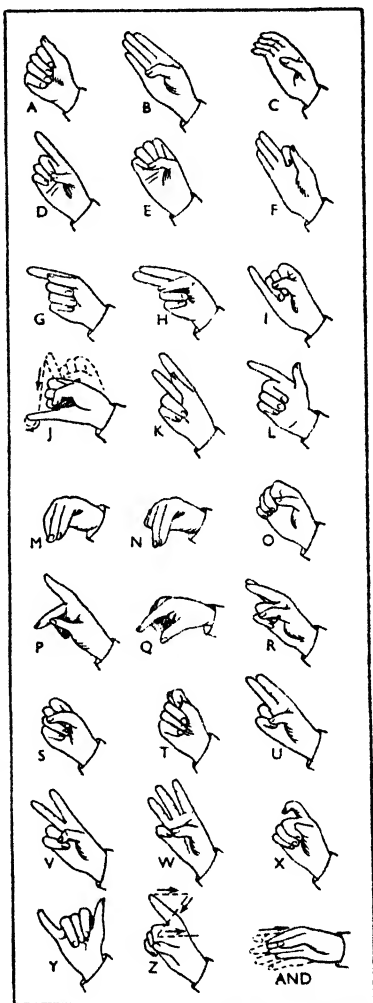
the methods must be such as appeal to the eye alone. The obvious ways of so appealing are by a sign language, representation by writing, printing, and pictures, lip-reading, and the manual alphabet. Generally speaking the two prin. methods are the manual and the oral, which utilise the above means of appealing to the eye in varying degrees. The manual and the oral may also be combined, but the combined systems have not been productive of such success as the purely manual; and the oral, which is admittedly unpopular with the deaf themselves, produces a much lower percentage of successes than the manual. In the manual method, signs are first used to stimulate thoughts, and the thoughts are given vernacular expression in the mind of the pupil by finger-spelling and writing. In Great Britain the two-handed, in Europe and America, for the most part, the one-handed, manual alphabet is in vogue. That this method is successful may be inferred from the fact that so many pupils can acquire an average shorthand speed of communication of 130 words a min. Perhaps the first manual alphabet pub. in England was that of Dalgarno in 1680.

So far as the single letters are concerned the system is simplicity itself. The rules are: (1) Touch the places of the vowels (*see* diagram) with a cross-touch with any finger of the right hand; (2) point to the consonants with the thumb of the right hand. The present two-handed alphabet appears to have been derived from Dalgarno's finger-alphabet. The one-handed alphabet was invented in Spain, and was probably first pub. in the works of Bonet.

A dactylology of syllables has occasionally been employed in the instruction of the D. and D., and a system of alphabetic and syllabic dactylology was pub. by Dr Delean the younger in 1830. The application of finger-language to designate numbers is attributed to Mr Stanbury, superintendent in a New York institution for the D. and D. Only one hand, the left, is used, the right being left free to record calculations.

The cipher is represented by the closed hand. To indicate this, the position of the hand is changed from perpendicular to horizontal; the thumb is pointed forwards for 10, the thumb and forefinger for 20, and so on to 90. Hundreds are pointed downwards; thus the thumb, forefinger, and middle finger pointed downwards represent 300. If 572 be the number to be designated, three positions are required; the five fingers are pointed downwards for 500, the little finger and ring-finger forwards for 70, and the thumb and forefinger held upright for 2. To represent thousands, the left hand is placed across the body towards the right shoulder, and the signs which were used in front for units in this position represent thousands. Variations of position with the same signs are adopted for tens of thousands and higher numbers. Though complex in description, the whole is easy and comprehensive in operation. In the oral

method, although reading and writing may be utilised as in the manual, the prin. means employed are articulation and lip-reading. The *sounds* of letters as



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opposed to the names are taught through the medium of lip-formation; but, of course, the names must be taught where different pronunciations of the same letter are to be conveyed. Articulation, which

in this connection denotes the teaching of deaf-mutes to speak and to comprehend speech by merely watching the motion of the vocal organs, seems to be as old as the time of Bede. Not one pupil in 30 attains any appreciable degree of proficiency by this method, and in all probability it requires in the pupil a higher degree of intelligence. Much patience and kindness on the part of the teacher are absolutely essential. The speech, such as it is, of the deaf-mute (who must, of course, be of that class who are not completely dumb) is artificial, constrained, and laborious, and generally too loud and discordant from the obvious fact that he cannot hear himself speak and has never heard anyone else speak. The system has never been a really serious rival to the art of dactylology, although opinion has differed on the question whether articulation is indispensable to the acquisition of thought. Ger. teachers think it is; Eng. teachers for the most part are of the opposite opinion. The Americans seem to hold a middle view.

Occupations of Deaf-mutes. These are necessarily wider than in the case of the blind (q.v.). Indeed only those in which speech and hearing are indispensable are closed to them. As an indication of the strides made in their education it may be instructive to note the following diversity of occupation: bookbinders, carpenters, cigar-makers, cutlers, gilders, hatters, jewellers, law-writers, optical and scientific instrument makers, and printers of all kinds. Some have attained distinction in the highest branches of oil and water-colour painting, while one, at least, became a sculptor of great ability, and another a conveyancing barrister. Two Amer. women, Laura Bridgeman (1829-89) (q.v.) and Dr Helen Keller (b. 1880) (q.v.), are noted for their triumph over their disabilities. The census returns, of course, show that the highest proportion are engaged either in non-productive and indefinite or in industrial occupations; but none the less many have found employment in commercial and professional circles.

Mechanical Aids to Hearing. Numerous devices known as deaf-aids have been invented, and have reached a high degree of efficiency. A deaf-aid incorporating the results of all the latest research was commissioned by the Brit. Gov. in 1947 for manuf. and distribution under the National Health scheme. The U.S. Bell Telephone laboratories have developed a system of visible speech transmitted from a microphone to a television screen, each inflection or sound being pictorially reproduced in the form of spurts or splashes. The users can quickly learn to identify the shapes of the spectrograms as words, for each sound has its own striking and divergent form. See also GALLAUDET, THOMAS HOPKINS. See Kerr Love, *Deaf-Mutism*, 1896; G. S. Haycock, *Education of the Deaf in America*, 1926; M. Clark and G. Crowden, *The Employment of the Deaf in the United Kingdom*, 1937-8; National Institute for the Deaf, *All about the Deaf*, 1939; and R. Scott Stevenson

and Douglas Guthrie, *A History of Otology*, 1949.

Deafness, see EAR.

Deák, Ferencz (1803-76). Hungarian politician. He became famous as an advocate of moderate reform in the years preceding the 1848 revolution. After 1861 he became leader of the Moderates, and drew up the address to the Emperor Francis Joseph, demanding the restoration of the constitution of 1848 and an independent Hungarian ministry. The pre-1918 dual system of monarchy, estab. 1867 between Austria and Hungary, was largely the result of his policy.

Deakin, Alfred (1856-1919). Australian statesman and orator, b. Fitzroy, Melbourne; son of Wm D., a native of Towcester, Northamptonshire, accountant to a firm of coach proprietors. Educ. at Melbourne Univ. Admitted to the Bar, Sept. 1877. Contributed non-political articles to the *Age* and the *Leader*. He represented Victoria in the Imperial Conference at London in 1887, and took a leading part in the cause of Australian federation as a member of the National Australian Federal Convention (1897), and of the Federal Council of Australia. He visited England a second time in 1900, as one of the Australian representatives in connection with amendment of the Commonwealth Bill. He succeeded Sir Edmund Barton as Premier of Australia, and held office three times between 1903 and 1910. He was appointed to represent the Commonwealth in the Imperial Conference, 1907. His works include *Irrigation in India*, 1892, *Irrigation in Australia*, 1893, and *Temple and Tomb in India*, 1894. He was a Protectionist-Liberal-Imperialist: it is claimed for him that he was an imperialist before Rudyard Kipling began to boom imperialism; and for many years he preached the now settled dogma, 'White Australia.' Retired 1912, and in his last years suffered from loss of memory. See W. Murdoch, *Alfred Deakin*, 1923.

Deakin, Arthur (1890-1955), trade unionist, b. Sutton Coldfield. He began work in a steel factory at the age of 13, and soon became an active Socialist and trade unionist. In 1932 he became national secretary of the General Workers' group of the Transport and General Workers' Union, and became a close friend of Ernest Bevin whom he succeeded as general secretary of the union. He was a constant opponent of Communism within his own union and the trade union movement as a whole. He was made a privy councillor in 1954.

Deal ('the valley,' a form of 'dale'), seaport and watering place in Kent, England. It is a limb of the Cinque Ports, and Walmer Castle, 1 m. to the S., is the official residence of the Lord Warden. Henry VIII built 3 castles in the neighbourhood: Walmer, Sandown, and D. Sandown Castle, at which Col. Hutchinson, governor of Nottingham Castle and tn for the Parliamentarians (see HUTCHINSON, JOHN), d., had to be destroyed as dangerous, owing to the incursion of the sea. The N. portion is

now groined by the Case system. D. was never a commercial port. The lower tn came into being when Sandwich harbour silted up in late medieval times, which had for the same reason succeeded that of the Rom. Richborough and Stonar. D. lies along a steeply shelving bank up which could be hauled the small vessels ('hobbies') serving it in the Downs—the roadstead for D. D. fl. as the landing and embarking point for the Downs (with fishing as a side-line for its pop. of boatmen), and consequently grew up along the foreshore on the sites and lines occupied by medieval fishermen's huts. Its prosperity was coeval with sail and reached its peak in late Georgian times. The inhab. to-day, proverbially courageous, are employed in boat-building, light industries, and catering for holiday makers, and many are employed in the E. Kent coal mines in the area. The tn church was not finished till 1716, and is a square, early Georgian building of simple merit, previous to which the very picturesque church of Old or Upper D. served the par. Old D. proper lies about a m. inland. There is a newer D., formerly known as Victoria Town, adjoining it to the S. in the vicinity of the castle built by Henry VIII. The intermediate area, formed by Middle Street, Coppin Street, Griffin Street, Dolphin Street, etc., is the historical D. Pop. 24,276 (1954). The administrative bor. of D. includes Walmer (q.v.) and the vil. of Great Mongeham.

Deal (Wood), a piece of square-sawn softwood timber, 2 in. to 4 in. thick and 9 in. to 11 in. wide inclusive. The term is now regarded as old-fashioned and is going out of use. At one time any piece of softwood of fair size was termed 'a deal,' and European Redwood (*Pinus sylvestris*) was often referred to as 'red' or 'yellow deal'; European whitewood—the common spruce (*Picea excelsa*)—was referred to as 'white deal.' Workers at the docks who unload softwood from ships are still referred to as 'deal porters.' See **TIMBER**.

Dealfish, (*Trachipterus*), a genus of oceanic fishes of the family Trachipteridae. Sev. species are known in European waters. The *raapmar* from Norway and Iceland is found sometimes round the coasts of Scotland. It is about 4½ ft. in length, and silvery in colour.

De Amicis, Edmondo, see **AMICIS**.

Dean (Lat. *decanus*, from Gk *deka*, ten), title of various eccles. functionaries. The title was originally derived from a Rom. civil officer mentioned under Theodosius and Justinian. Its first use is found in the monasteries, where the *decanus* had the supervision of 10 monks. When the canonical life was introduced among the clergy resident at cathedrals, the title was often applied to their head. Mention of an archipresbyter, a somewhat similar officer attached to a bishop's staff, occurs in St. Jerome's 4th epistle to Rusticus. The D. of an Anglican cathedral has entire charge of the fabric of the building, the arrangement of the services, and the management of property. There are also certain D.s of *peculiars*, who have

charge of particular churches not under episcopal supervision, such as the church of Battle in Sussex and the chapels royal. *Rural D.s* have held office in England from very early times. Their duty is to attend to the concerns of parts of a diocese and report thereon to the bishop. The bishop of London is D. of the prov. of Canterbury. In the Rom. Catholic Church the D. of the Sacred College is the cardinal who has held rank longest. The office is generally held by the bishop of Ostia and Velletri.

Dean, East and West, 2 rural dists. of Gloucestershire, England, forming part of the Forest of Dean (q.v.). E. D. comprises 11 pars., pop. 20,609; and W. D. 6, pop. 18,173.

Dean, Forest of, tract of land and national park in W. Gloucestershire, England, situated between the Severn and Wye valleys. It was a royal forest, and much of the timber was cut down by order of Charles I, but it was reafforested by order of Parliament after the Restoration. A great portion of its timber was formerly utilised for the navy. Coal and iron abound throughout the forest, also clay, building stone, and ochre. The principal tns are Cinderford (q.v.) and Coleford (q.v.). An account of the F. of D. has been pub. by H.M.S.O. as a national park guide.

Dean of Guild, prior to the Burgh Reform Act of 1834, head of the numerous trade guilds in Scottish burghs. His function was to act as arbiter in all mercantile and maritime affairs within the burgh. His present powers consist mainly in regulating the erection of suitable buildings and condemning those unfit for habitation. See also **DEACON OF A TRADE**.

Deane, Richard (1610–53), adm. and gen. at sea. In 1644 he fought with the parl. army in Cornwall, and was also present at the battles of Naseby, Preston, and Worcester. He was appointed joint commander with Blake and Monck in 1653, and lost his life at the first battle off the N. Foreland.

Deane, par. of Bolton (q.v.).

Dearborn, city in Wayne co., SE. Michigan, on R. Rouge (freighter docks). It is the home of the Ford Motor Co. D. manufs. aircraft parts, steel, metal products, and bricks. The Edison Institute of Technology, Greenfield Village, and a veterans' hospital are here. The hp. of Henry Ford has been restored. Pop. 95,000.

Dearne, urb. dist. of Yorks (W. Riding), England, 7 m. NE. of Rotherham, created (1937) from the former urb. dists. of Bolton upon Dearne and Thurnscoe. Coal-mining is the chief industry. Pop. 25,620.

Deat, Marcel (1894–1945), Fr. politician, b. Guérisny in Nièvre. Deputy in 1928, and minister for air in 1936, he accepted office under the Vichy Gov. in 1940, and founded the so-called 'unity' party, the Rassemblement National Populaire. He was executed for treason after the liberation of France.

Death. Under **BIOLOGY** it is pointed out that there is a continual change proceeding in every cell of any organism,

waste matter being carried off and new matter deposited. Thus cells of organisms are continually dying, and D. in this molecular sense is an essential to life. But it inevitably follows that, because of this process of metabolism, D. in the larger sense, i.e. the D. of the entire organism, must ensue. Thus D. would occur naturally by the gradual decay of the organism as in old age, but most organisms do not die in this way. The majority of D.s are *accidental*, being caused by disease or violence. And D. thus caused must begin, as Bichat said, at the heart, the head, or the lungs. But these three *vital* organs, the heart, brain, and lungs, are mutually dependent, and while D. may be immediately caused by the failure of one of them, yet that one may have failed through an impairment in the functioning of another. D. from failure of the heart may be sudden, as in *syncope*, or gradual, as in the action of some poisons. Or, again, it may occur because the blood is insufficient in amount to excite the heart, as in the case of *anaemia*. D. from failure of respiration, or *asphyxia*, again, is chiefly due to violence, although certain poisons and *tetanus* may cause it. D. which begins at the brain, or D. by *coma*, is caused either by violence, or by the action of poisons, or by the formation of clots of blood in the vessels.

The signs of approaching D. are sometimes well marked, as in natural D. from old age, by a vacancy in the intellect, and an atrophy of the senses and sentiments. Again, delirium and even dementia, or imbecility, are often precedents of D. Similarly the muscles relax, and are incapacitated, the voice becomes low, and the heart either begins to fail gradually, the pulse becoming faster but weaker, or it may beat irregularly though not be weaker, or it may suddenly contract violently and stop. The respiration again may be hurried and panting, or slow and laborious, while the 'death rattle,' as it is commonly termed, is caused through the passage of air from the lungs through the fluid (mucus) which has collected in the air passages. The signs of actual D. are: (1) *The extinction of the vital functions*. The cessation of circulation and respiration may not always signify D., for they may, as in drowning and in newly born infants, be entirely suspended for a while and then restored, or they may even be reduced so low that while they have not ceased they may yet be incapable of detection. Loss of heat is a tolerably certain sign, although in exceptional cases the temp. may rise after D. Certain signs of D., however, are the loss of contractility of the muscles on application of a galvanic current. (2) *Changes in the tissues*. The most important of these is, of course, the *rigor mortis*, which, commencing in the neck and trunk, proceeding through the upper and then the lower extremities, then passing away in the same order after from 24 to 36 hrs, is a sure sign of D. (3) *Changes in appearance*. These are well marked, but the chief are the lividity of various parts of the body, and the ap-

pearance of a green tint on the skin of the abdomen, accompanied by a separation of the epidermis.

For conceptions of D. held by primitive and civilised races, see BURIAL CUSTOMS; IMMORTALITY; PHILOSOPHY; RESURRECTION; TRANSMIGRATION, etc.

Death, Registration of, see REGISTRATION OF BIRTHS, MARRIAGES, AND DEATHS.

Death Cap, see AMANITA.

Death Duties. The only death duty remaining after 1949 was the Estate Duty. The Legacy and Succession Duties were repealed in that year. See ESTATE DUTY; LEGACY AND SUCCESSION DUTIES.

Death Valley, or the **Amargosa Desert**, gloomy tract of desert land from 100 to 280 ft below the level of the sea and with an area of 2906 sq. m., situated in Inyo co., California, U.S.A. The Amargosa R. flows into it. It has a wide variety of bird life, but plant life has only a wide-spaced, precarious footing. It is now a National Monument. See D. C. Peattie, *The Road of a Naturalist*, 1941. (See illustration on p. 297.)

Death Watch, name of a certain class of coleoptera or beetle (*Anobium*). They are about $\frac{1}{2}$ in. long, with small, round, and convex bodies of light brown colour. They are found in old wainscoting, and the wood dust they make in the process of their burrowings can often be seen near old woodwork. When disturbed they simulate death. Many unfounded superstitions have grown up around them; the ticking noise which they make by striking the head against the wood is really a sexual signal. See ANOBIDAE.

Death's-head Moth, or *Acherontia atropes*, curious species of the family Sphingidae. It is the largest Brit. hawk-moth, with downy wings measuring 5 in. from tip to tip, and its thorax is marked as though with a skull. When it is at rest it sometimes gives out a squeaking noise, produced probably by rubbing the palpi upon the proboscis. The caterpillar is about 4 in. long and is brightly coloured, feeding on potato plants.

Deauville, Fr. seaside resort in the dept of Calvados, on the Eng. Channel. It is the more fashionable neighbour of Trouville (q.v.), with which it is linked by a bridge over the R. Touques. It is called 'la Plage Fleurie,' and is known for its fine beach, horse-racing, and casino. Pop. 5400.

De Bary, Heinrich Anton (1831-88), Ger. botanist and biologist, who made valuable discoveries in mycology and bacteriology, demonstrating the power of parasitic growths in the production of disease. Chief works: *Die Mycetozoen*, 1864; *Beiträge zur Morphologie und Physiologie der Pilze*, 1864-82; and *Vorlesungen über Bakterien*, 1886, Eng. trans., 1888.

De Bay, Michael, see BAITS, MICHAEL.
Debbieg, Hugh (1731-1810), gen. who as cadet gunner was present at the sieges of Louisburg and Quebec under the commandship of Wolfe, and served with distinction at L'Orient (1746) and Bergen-op-Zoom (1747). A secret mission

to France and Spain occupied him during 1767, and he was entrusted with the protection of London in the Gordon Riots (1780).

De Bene Esse, technical legal expression equivalent to 'provisionally,' and applied to the conditional doing of an act for the time being, subject to such act being disallowed on a fuller examination of its propriety. The term is particularly applied to the provisional examination of a witness before a trial where it is feared that the witness, by reason of age or illness, may be unable ever to appear at the trial (see *DEPOSITION*). A verdict taken *de bene esse* is one that may be reversed on further consideration.

transferred in the company's books. *D.s* to bearer are negotiable and pass by delivery with coupon attached for interest. It is a term used by customs officers for a certificate entitling an exporter of goods to receive bounty or drawback on exported goods. See *COMPANY AND COMPANY LAW*.

Debit and Credit, see *BOOK-KEEPING*.

De Bono, Emilio (1866-1944), It. gen. and Fascist politician, b. Cassano d'Adda. He took part in the march on Rome in 1922, was later governor of Tripolitania, and foreign minister. He commanded the It. forces in Abyssinia in 1935, and wrote an *apologia* (1936). He also wrote *Anno XIII: the Conquest of an*



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DEATH VALLEY, CALIFORNIA

Debenham, Frank (1883-), scientist and explorer; geologist of Scott's Brit. Antarctic *Terra Nova* expedition, 1910-13. He was prof. of geography, Cambridge Univ., 1930-49, and founded the Scott Polar Research Institute (q.v.) in 1925. He pub. the *Report on Maps and Surveys of the 'Terra Nova' expedition and in the Antarctic*, 1952, as well as other non-polar works.

Debenture (Lat. *debentur*), a deed by which a company charges its property and assets, and covenants to pay the holder the sum secured by the D. at a fixed date, together with interest up to that time. Under the Companies Acts, every D. must bear the registrar's certificate of registration. There are registered *D.s* and *D.s* to bearer. The first can only be

Empire, 1937. He voted against Mussolini in 1913 and, after trial by a special court, was shot as a traitor in Jan. 1944.

Deborah (Heb. 'bee'), prophetess and 'Judge,' wife of Lapidoth, incited Barak to free her people from the Canaanite oppression which they had endured for 20 years. She joined Barak in leading an army against the Canaanites under Sisera, and completely vanquished them in the plain of Esdraelon (Judges iv). Sisera, a fugitive, was murdered in his sleep by Jael, wife of Heber, the Kenite. The triumphant outcome of this battle ensured a long peace. The 'Song of Deborah' (Judges v) is acknowledged by scholars generally to be a genuine contemporary document, and so one of the oldest records preserved in the Bible.

See W. F. Albright, 'The Song of Deborah in the Light of Archaeology', *Bulletin of American School of Oriental Research*, 62, 1936.

Debra, Tabor, large dist. and tn of Ethiopia, E. Africa, 35 m. E. of Lake Dembea.

Debrecen, formerly **Debreczen**, city of E. Hungary, cap. of the co. of Hajdu-Bihar, 120 m. E. of Budapest (q.v.). It has long been a Calvinist stronghold. In 1849 the declaration of Hungarian independence was made by Kossuth (q.v.) in the splendid Great Church (Calvinist) of D., and in Dec. 1944 it was in D. that the provisional National Assembly met after the Ger. army had retreated from E. Hungary. During the anti-Russian risings of Oct.-Nov. 1956 the tn was under insurgent control. There is a fine Protestant college (c. 1550), and a univ. (1914) with a library containing 500,000 vols. Pharmaceutical goods and machinery are manuf., and there is a trade in livestock from the Hortobágy *puszta* (q.v.). There is an airfield. Pop. 118,000.

Debreczen, see **DEBRECEN**.

De Broglie, Prince Louis Victor (1892-), b. Dieppe. He studied arts at Paris, and then physics. Prof. at the Institut Henri Poincaré since 1928. In 1924 he pub. his famous thesis in which he predicted that all moving (atomic) particles have properties normally associated with wave motion. Experimental proof of the wave nature of electrons was given by Davisson and Germer in 1927. Awarded the Nobel Prize in 1930.

Debrosses, Charles (1709-77), Fr. lawyer and historian, b. and educ. at Dijon. He became a judge in his native tn, and gained the friendship of Diderot and Buffon. He contributed articles on language to the encyclopaedia of Diderot and Voltaire, and collected 700 fragments of Sallust which he pub. (1777) as *L'Histoire du VII^e Siècle de la République Romaine, par Salluste*.

Debs, Eugene Victor (1855-1926), Amer. railway labour leader, b. Terre Haute, Indiana. Served as a locomotive fireman. Elected to Indiana state legislature (1884); president of the American Railway Union (1893-7), for which he won a strike on the Great N. Railway. Joined the Socialists in 1897. Socialist candidate for president 1900, 1904, 1908, 1912, and 1920. From 1914 he ed. the *National Rip-Saw*, St. Louis. In 1918, being opposed to the war, he was sentenced to 10 years' imprisonment for obstructing recruiting. It was during his incarceration that he was for a fifth time nominated for president. He was released in Dec. 1921. See *Life, Writings, and Speeches*, 3rd ed. 1910, and also M. Coleman, *Eugene F. Debs, a Man Unafraid*, 1930.

Debt, liquidated or determinate sum of money due from one person to another. D. includes an obligation to pay money on a contingency which must happen, but not where the event may not happen, e.g. a contract of suretyship is not a D. D.s may be classified into: (1) D.s of record, i.e. D.s evidenced by the records

of a court of a record, the principal being recognisances, and judgment D.s; (2) specialty D.s—that is, D.s created by deed or confirmed by a special evidence under seal, such as a covenant to pay rent on a lease; and (3) D.s created by simple contract. Interest is payable on a D. only under an express or implied contract to pay interest, by trade usage, under a written contract to pay money on demand or at a fixed date, on money fraudulently withheld, in the case of D.s secured on land, under the Civil Procedure Act, 1833, where the jury allows it, and on all judgment D.s. D.s are recoverable (a) by action in the high court, whatever the amount, but, in practice, for not less than £40, otherwise costs may not be awarded. A creditor who issues a writ for a D. of a stated amount against a debtor who cannot show a *prima facie* defence may, under Order 14 of the Supreme Court, obtain from a Master (q.v.) leave to sign judgment forthwith without a formal trial; (b) by action in the co. court where the D. does not exceed £400, or equitable debts, e.g. in a foreclosure action, up to £500. There is an analogous procedure by default summons to the summary process in the high court. Actions on judgment D.s and specialty D.s are barred after 12 years, and those on simple contract D.s after 6 (see LIMITATIONS, STATUTES OF). Judgment D.s have priority over specialty and simple contract D.s against the personal estate of a deceased debtor, unless the estate is insolvent, when, if administered by the personal representatives, rates and taxes, wages or salaries of clerks or servants up to £50, and wages of labourers or workmen up to £25, must be paid first, but if administered in bankruptcy, the 3 classes are payable *pari passu*. D.s being choses in action are assignable under the Judicature Act, 1873, by writing signed by the assignor, and written notice of the assignment must be given to the debtor. There is now no imprisonment for debt, except on a judgment debt, where a debtor can pay and will not or has voluntarily put it out of his power to pay. In Scottish law D.s charged on personality are called moveable D.s, and those charged on land heritable D.s. They are recoverable either in the court of session or the sheriff court, there being analogous provisions as to jurisdiction to those which obtain in England. Following the Rom. law actions are only barred by long prescription. The process by which a creditor is allowed to detain the goods of his debtor, which happen to be in the hands of a third party, is by arrestment.

Debt, National or Public, see **PUBLIC DEBT**.

Debt Conversion refers to the replacement of gov. loans that have matured by new loans. It has been used to reduce the rate of interest on loans raised when money was dear. Wars have been a prin. cause of national debt; govts. have been forced by the urgent need of raising money at very short notice to offer high rates of interest. And after costly wars, govts. were faced with long-dated loans bearing high rates of interest. The

financial hist. of Great Britain for the past 200 years is marked by numerous D. C.s, mostly after long and costly wars and in periods of cheap money.

The first conversion of Brit. national debt came in the reign of Queen Anne, when a mixed bag of floating liabilities was converted into £9 million of S. Sea Companies 6 per cent stock. 1760 saw a conversion of £54 million of 4 per cent stock into the same amount of new stock at 3 per cent. After the Napoleonic wars numerous conversions took place. In 1817 the Irish debt of £103 million was converted into debt of the U.K. In 1822 £150 million of 5 per cent stock was converted into £157 million of 4 per cent stock, and 2 years later £70 million 4 per cent stock was converted into an equal quantity of stock at 3½ per cent. In 1830 £151 million was converted partly into 5 per cent stock at a price of 70, but mainly into 3½ per cent stock at par. A large conversion took place in 1844, when £249 million 3½ per cent stock was converted into new stock bearing 3½ per cent for 10 years and 3 per cent for 20 years. In 1853 Mr Gladstone, in pursuit of thrift, saw to the conversion of £3 million 3 per cent stock. In 1883 £70 million 3 per cent stock was converted into terminable annuities, and in 1884 £23 million 3 per cent stock was converted into 2½ per cent stock at 102 and 2½ per cent stock at 108. To Goschen belongs the credit of the last big conversion of the 19th cent. In 1888 he brought forward a plan for the conversion of the 3 per cent stocks into one class of stock to bear interest at 3 per cent for the first year, 2½ per cent for the next 14 years, and 2½ per cent for the following 20 years, and thereafter until redemption. Goschen's scheme was highly successful.

The next series of conversions took place after the First World War. After the outbreak of war, the Brit. Gov. had to borrow so heavily that in 1923 the total national debt stood at £7742 million. But by 1919 the gov. was able to convert nearly £200 million of war stocks, thus greatly reducing the interest charges. In 1921 a further £163 million were converted. Other large conversions followed, and in 1932 money being comparatively cheap, the gov. converted the 5 per cent war loan to 3½ per cent, saving annually £30 million gross and £23 million net. During the Second World War the gov. was able to borrow at low interest rates, and in spite of the huge increase in the national debt from £8000 million in 1939 to over £20,000 million in 1946, the average rate of interest remained at around 3 per cent (hence the 'three per cent war').

In 1951, after the increase in bank rate, interest rates generally rose, and in early 1957 3½ per cent war loan yielded over 5 per cent. In these circumstances (when current market rates of interest are higher than nominal rates) conversions are made to induce holders to renew their loans either by offering higher rates or by borrowing for short periods at current rates in the hope of borrowing 'long' when rates of interest are lower. Between

1945 and early 1957 nearly \$6000 million was converted. In 1954-5 alone, £1400 million was converted out of a total national debt of £27,000 million. See NATIONAL DEBT.

Debts, Interalised (First World War). During the First World War (1914-18) Great Britain had pledged her credit not only on her own behalf but also on behalf of her allies. She owed huge sums to the U.S.A. and huge sums were owing to her. Arrangements had to be made for the settlement of these colossal D. In 1922 the question of debt settlement was brought forward as a matter of urgency by U.S.A., which was the sole purely creditor nation amongst the Allies. This brought forth the Balfour note, addressed by Lord Balfour on behalf of the Brit. Gov. to the Fr. ambas. and to the representatives of the interested European govts. It said that although Great Britain had lent more than she had borrowed, she favoured the cancellation of the war D. incurred between the Allies. She could not, however, agree to the cancellation of D. owing to her from European nations without a similar concession being made by America in respect of Brit. D. By agreement between Britain and America in 1923 the Brit. debt was funded. Bonds to the value of \$4600 million were issued dated 1922, and maturing 1984, interest being payable half-yearly at the rate of 3 per cent per annum from 1922 to 1932, and thereafter at 3½ per cent until the principal was repaid. The agreement provided for the repayment of the principal by ann. instalments increasing from \$23.8 million in 1923 to \$175 million in 1984. This agreement was concluded on behalf of the Brit. Gov. by Mr Stanley (later Earl) Baldwin. In 1927 an agreement was concluded for the settlement of the war debt of Yugoslavia to Great Britain. Funding agreements were signed in respect of all the allied war D. to Great Britain except that of Russia.

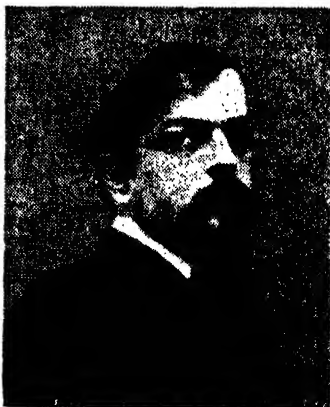
When the 1932 payment of debt to America fell due, the position was: total funded debt, \$4600 million; principal paid off, \$202 million; interest paid, \$1149.7 million; total paid by Britain, \$1351.7 million. Notes were exchanged without moving the U.S.A. Gov. in its determination to exact the debt. The Brit. Gov. paid \$95.5 million in gold, intimating that the payment must not be regarded as implying a revival of the old system, but was to be taken into account when arriving at a final settlement. In 1933 the Brit. Gov. reopened talks in the hope of reaching a final settlement with America, which would not involve a resumption of the claim on Germany for reparations. The U.S. Gov. made no proposals, with the result that Britain made token payments on account of instalments falling due in June and Dec., pending a discussion of a settlement. The position in 1934 was that Britain had paid \$1464.8 million to America in respect of war D. funded at \$4600 million, yet not much more than 4 per cent of the principal had been paid off. Meanwhile

other countries were adopting the Brit. attitude. The Fr. Gov. in 1933 refused to pay any instalments upon even the commercial portion of her war debt. America sent out formal notices towards the end of 1934 reminding foreign debtors of the total of \$154,726,976 due for the Dec. 1934 instalment. The notices included a 'bill' to Great Britain for \$117,670,765. Notices continued to be served in the ensuing years by the U.S. Gov. to the Brit. Gov., and the Brit. *chargé d'affaires* in Washington continued to make the customary declaration that the Brit. Gov. would be willing to reopen discussions 'whenever circumstances are such as to warrant the hope that a satisfactory result might be reached' (1938).

Deburau, Jean Baptiste Gaspard (1796-1846), famous Fr. mimic, b. Bohemia, son of a Fr. soldier. As a youth he led a wretched life with travelling troupes; but, having learned everything from balancing a ladder on his nose to *le saut périlleux*, he hit on the idea of resuscitating a Rom. pierrot worthy of the days of Bathyllus. Thus, with befloured visage, he came to the Funambules theatre, where Charles Nodier recognised his genius. Aided by his power as a farceur, his sang-froid, lively features, and artistic intelligence, he quickly became the rage of Paris. Gautier, indeed, ranked him as an actor with Talma and Rachel—'a happy and rare accident.' His son Charles (1829-73) was also well known as a pierrot at the Funambules.

Debussy, Claude (1862-1918), Fr. composer, b. St Germain-en-Laye, studied at Paris Conservatoire from age of 11—under Lavignac, Marmontel, and Guiraud. Under the tuition of Massenet, he won the Grand Prix de Rome with his cantata *L'Enfant prodigue* in 1884. During the obligatory years of study in Rome he tried to forget the cramping influence of the old formulas and to strike out new laws more adapted to his intuition. One result was *Printemps*, an orchestral suite sent from Rome to the Institut, which appears to have shocked that body by its harmonic iconoclasm. He revitalised most forms of musical art, whether symphonic, dramatic, pianoforte, or lyrical, by sheer technical skill combined with elusive originality, and an adroit use of overtones and of unusual chords. He came to some extent under the influence of Erik Satie, but had a much stronger creative force, and he added much of his own to the harmonic innovations of Chabrier and Faure. He was not an innovator by mere caprice. He appreciated the oneness of all art; and he saw that music must develop along lines parallel to those along which poetry or painting develop. His next productions, *Arctiques oubliées*, *Cinq Poèmes de Baudelaire*, and *Suite bergamasque*, show the break-away from romanticism towards the direct interpretation of feeling. He composed his celebrated *Prélude à l'Après-midi d'un faune* under the inspiration of Mallarmé's poem, a work as original as the *Symphonie fantastique* of Berlioz and baffling by the apparent simplicity with

which it succeeds in reflecting the feelings, now ardent, now sensuous, now profound, which it is intended to express. His next masterpieces were *Chansons de Bilitis* for voice and piano, 1897, and *Nocturnes* for orchestra, 1899, all impressionist works; and in 1902 his one opera, *Pelléas et Mélisande*, which frankly discards not only the old reputedly obsolete forms, but also the lyrical dramatic form of Wagner. It is regarded by some critics as exhibiting a perfect balance between poetry and music. The only other works for the theatre he finished were the incidental music for d'Annunzio's *Martire de Saint Sébastien* and a ballet *Jeux*, composed for Diaghilev. Among his finest mature piano music are *Estampes*, 1903, 2 sets of *Images*, 1905-7, and 2 books of *Préludes*, 1910-13; and the greatest orchestral work is *La Mer*, 1903-5. He wrote many song settings of the



CLAUDE DEBUSSY

finest Fr. poetry. An early string Quartet, 1893, long remained his only chamber music, but in his last years, much troubled by a fatal illness, he began a set of sonatas for various instruments, of which only 3 were completed. See L. Laloy, *Claude Debussy*, 1944; L. Vallas, *Claude Debussy: his Life and Works* (Eng. trans.), 1933; O. Thompson, 1937; and E. Lockspeiser, *Debussy* (Master Musicians), 1936, rev. 1951.

Debye, Peter (1884-), Dutch physicist, b. Maastricht. Prof. at Zurich and later at Utrecht, Göttingen, Zurich again, and then Leipzig. Director of the Kaiser Wilhelm Institute in Berlin from 1935-9, when he went to the U.S.A. His application of quantum mechanics to the problem of specific heats of solids gave a theory in good agreement with experiment. Much of his work has been on the structure of molecules. He was awarded the Nobel Prize in 1936.

Décadents (Lat. *dc*, from; *cadere*, to fall), school of young writers and artists, such

as Baudelaire, Verlaine, Mallarmé, and Barrès, who were much discussed in France about 1882. The more debased took absinthe and drugs and endeavoured by their eccentricities to attract public attention. The Symbolist movement rose from, and absorbed the best of, the D. The Symbolists were aesthetic and literary. They delighted in half-tones, delicate shades of expression, and placed psychical sensation above realism. 'Decadent' is still applied to those modern writers and artists whose artistic ideal is the production of morbid and unhealthy types. See Symons, *The Symbolist Movement in Literature*, 1899; P. Quennell, *Baudelaire and the Symbolists*, 1929.

Decagon (Gk *deka*, ten, *gōnia*, angle), see POLYHEDRON.

Decalogue (Gk *deka*logos, ten sayings), name of the Gk fathers for the Ten Commandments, of which there are 2 versions, in Deut. v. 6-21 and Exod. xx. 2-17. They were given to the Israelites on Mt Sinai, and engraved on 2 tables of stone. These being broken, Moses was commanded to hew 2 fresh tables on which Yahweh again engraved the D. Only 4 of the precepts are peculiar to the Hebrews, the 1st, 3rd, 9th, and 10th—of the others, all 6 are found in some form in Babylonian, and 4 in Egyptian, texts. There is nothing in them inconsistent with Mosiac date. It is generally accepted that originally the 10 were briefer and more similar in form than they are now. Their apodictic form is peculiar to Israel. See also PENTATEUCH. In the IV. Church since the time of Augustine it has generally been held that the first 4 commandments, giving the duty towards God, were inscribed on the first table, and the last 6, the duty towards one's neighbour, on the second. Philo and Josephus, however, assume the natural arrangement of 5 on each table. There are 3 distinct arrangements of the commandments: (1) The Talmud makes the introductory sentence, 'I am the Lord thy God which have brought thee out of the land of Egypt, out of the house of bondage,' the first commandment, and then combines the next two (Exod. xx. 3-6) into one, thus keeping the number 10; (2) Rom. Catholics and Lutherans also combine these 2 commandments and keep the number by splitting the last commandment into 2; (3) the Gk Church, the Anglican Church, and all the other reformed bodies keep the arrangement assumed in this article. The D. deals with moral, not with ritual, questions. See H. J. Flowers, *The Permanent Value of the Ten Commandments*, 1927; A. Alt, *Die Ursprünge des Israelitischen Rechts*, 1934.

Decameron, collection of tales by Boccaccio (q.v.) written between 1348 and 1388, conceived as related in 10 days at a country villa during the plague at Florence. They are of a licentious character, but told with much humour and great literary skill. They have been drawn upon by generations of writers, including Chaucer, Shakespeare, and Tennyson.

Decamps, Alexandre Gabriel (1803-60),

celebrated Fr. painter, b. Paris, and the pupil of Abel de Pujol, David, and Ingres. He first exhibited in the Salon of 1827, the originality of his style at once attracting notice. He founded the Fr. school of Orientalism, and took high position as a colourist and landscape and genre painter. 'Café in Asia,' 'Street of a Roman Village,' 'Children Playing near a Fountain,' are among his finest pictures. Chantilly and the Wallace collection in London contain some of his best work. See lives by Moreau, 1869, and Clément, 1886.

De Candolle, see CANDOLLE, A. P. DE. **Decapitation**, or beheading, an ancient punishment employed by the Gks and Romans. First incurred in England by Earl Waltheof, beheaded by William the Conqueror (1075). Not only felons but also delinquents of high rank were formerly decapitated, the rebel lords of 1745 being the last Englishmen to incur that penalty. Those capitally convicted in France are still beheaded with the guillotine (q.v.). See CAPITAL PUNISHMENT.

Decapoda, order of malacostracan crustaceans which includes crabs, lobsters, crayfishes, and shrimps, and is therefore the best known order. Usually all the thoracic segments are fused to the head in the species, and there are always 5 pairs of trunk legs; the sexes are distinct. The decapods are widely distributed, favouring chiefly the warmer seas. The term is also used for the molluscan sub-order of Cephalopoda, which have 8 arms and 2 tentacles.

Decapolis (i.e. Ten cities), name used in ancient writings to denote a league of 10 cities situated in or near Palestine and mainly E. of the Jordan. In the 2nd cent. the number was apparently increased. The confederate cities included Scythopolis, Philadelphia, Damascus, Bella, Dium, Hippos, Gadara, Gerasa, Raphana in Bashan, and Kanatha. Details are obscure, but these towns were probably founded or settled in by some of Alexander the Great's veterans.

Decastyle, in classical architecture, a portico having 10 columns in a row.

Decatur, Stephen (1779-1820), Amer. naval commander of Fr. extraction, b. in Maryland. He achieved distinction by his daring feat at Tripoli (1804) when he made a dash into the harbour and burned the Brit. frigate *Philadelphia*, which the Tripolitans had captured. He also captured the Brit. frigate *Macedonian*, when commodore of a squadron off the Atlantic coast in 1812. Soon after leaving New York (1814) he was engaged in a hard fight with the Brit. fleet and forced to surrender. The same year he sailed in command of a squadron against Algiers, but the war was soon concluded by a treaty dictating terms to Algiers, Tunis, and Tripoli. He met his death in a duel near Washington with Commodore James Barron. See the standard life by A. S. Mackenzie, 1846, and C. T. Brady, *Stephen Decatur*, 1900.

Decatur: 1. City, cap. of Macon co., Illinois, U.S.A., 40 m. E. of Springfield, in an agric., oil, and coal area. There are

railway shops, corn and soyabean processing plants. D. manufs. automobile accessories, chemicals, plastics, and iron, steel, and brass products. It is the seat of the James Millikin Univ. Pop. 66,300.

2. City of Georgia, U.S.A., a health resort close to Atlanta. It manufs. furnaces, machinery, and prefabricated houses, and is the seat of the Agnes Scott College and the Columbia Theological Seminary. Pop. 21,635.

3. City in N. Alabama, U.S.A., formed in 1927 by the union of New D. and D. It has important manufs. Pop. 20,000.

Decazeville, Fr. tn in the dept of Aveyron. It is the centre of the Aveyron coal-field, and has ironworks. Pop. 12,100.

Decca System, see AERIAL NAVIGATION; NAVIGATION.

Deccan, comprehensively an area of India that is situated S. of the R. Nerbudda, though more particularly the dist. stretching between that riv. and Kistna. The states of Mysore, Hyderabad, and the area between Bombay and Madras constitute a major part of this large tract. With the Ghats rising to 3000 ft on the W. it forms a high plateau.

Deceased Wife's Sister. The Marriage Act, 1835, nullified as from that date all marriages between persons within the prohibited degrees of affinity (relations of marriage) while legalising those already celebrated. But by the Deceased Wife's Sister Marriage Act, 1908, marriage with a D. W. S. is legal. The Act of 1908, while validating the union as a civil contract, expressly permits any minister of a church or chapel of the Church of England to refuse to celebrate the marriage without incurring any penalty, civil or eccles., but the clergyman so refusing may permit another to officiate in his place. The Act does not legalise marriages annulled before 28 Aug. 1907, and saves all existing rights and interests. Consequently the Act in no way affected the devolution of property on intestacy as to the issue of marriages celebrated before the Act.

Decabalus, see DACIA.

Decalea, tn of Attica, seized and fortified by the Spartans in the Peloponnesian war.

December (Lat. *decem*, ten), name given to the last, or twelfth, month of the year. It is so called because before the time of Julius Caesar the first month of the old Rom. calendar was March, so that what is now the twelfth month was only the tenth. The Anglo-Saxons called D. Mid-winter-month or Yule-month.

Decembrists, the first revolutionary movement in 19th cent. Russia, after the Napoleonic wars. D., mostly aristocratic officers, aimed at introducing a liberal constitution and abolishing serfdom; some of them were Republicans. A badly prepared and conducted revolt in St Petersburg on the accession to the throne of Nicholas I (Dec. 1825) resulted in 5 D., being hanged and sev. more banished to Siberia.

Decemviri (Lat. 'ten men'), 10 magistrates of supreme authority at Rome. After the fall of the Tarquins dissatisfaction was still rife among the plebeians

because, there being no written code of laws to protect them, they depended for justice on the pleasure and will of the patricians. The tribunes appealed on behalf of the people to the senate, and in 451 BC the new magistrates were appointed (*D. legibus scribendis*, the D. for writing the laws). Their authority was supreme, and with their appointment all other magistracies ceased. According to the agreement the plebeians were eligible for the new order, but no plebeian was elected in 451 BC. At the end of their year of office the D. pub. a code of laws in 12 sections. Another body of D. was appointed for 450; they added 2 more sections, and the whole became known as the *leges duodecim tabularum* (laws of the 12 tables) (see TWELVE TABLES). The order continued to be elected each year for 3 years, but in the third year their behaviour became so despotic that the people were exasperated and the old order restored. There were other orders of D. at Rome. The *D. sacris faciundis* (D. for the performance of sacred rites) were appointed in 367 BC, principally to guard the Sibylline books. They consisted of 3 patricians and 5 plebeians, replacing the earlier patrician *duumviri* (q.v.); Sulla increased their number to 15 (*quindecimviri*) in 81 BC. The *D. litibus iudicandis* (D. for judging cases) had jurisdiction in civil cases during the republic.

Deciduous Trees shed their leaves annually in temperate climates in autumn. The fall of the leaf is caused by a layer of cork, the abscission layer, being formed across the base near the insertion of the leaf. This layer becomes disorganised, as water cannot pass through it, and so causes a break, which is hastened by wind or frost.

Decimal Point. Though adopted for various purposes by Pellous, 1492, Adam Reise, 1525, and Rudolf, 1530, the D.P. was first used by John Napier (q.v., 1550-1617) as a device to separate the fractional extensions of whole numbers formed during the computation of his table of logarithms (q.v.); but when the computations were finished the D.P. was discarded with the fractions and there is no evidence of it in his *Descriptio* (1614). Its use is, however, revealed in the *Constructio*, which was pub. posthumously by his son.

Decimal System, name applied to any system of weights, measures, etc., which has the standard unit divided into tenths, hundredths, etc., for parts below it, and multiplied by 10 or powers of 10 for parts above it in value. It has been adopted for weights and measures and money in most of the European countries, but has been rejected in Great Britain and in America for various reasons, one of the chief being that our system possesses better facilities for dividing into halves and quarters with fairness to purchasers than does the D. S. It has been found inapplicable to time. See METRE; NOTATION; NUMERALS; GRAMME.

Decimals. On account of the difficulty found in manipulating many small fractions such as $\frac{1}{2}$, $\frac{3}{4}$, $\frac{123}{1000}$, particularly in addition and subtraction, it was

found necessary to devise some simpler system of notation. This was done by an extension of the ordinary system of numeration. If we take the number 125, the figure 5 = five units; the figure 2 = two tens; the figure 1 = one hundred; i.e. going from right to left a figure becomes ten times as great at each step. A dot (called the decimal point, *q.v.*) being placed after the units figure, this process was then carried further, and figures were made to continue decreasing by ten at each step from left to right. Thus, in 125.346, the 3 = three-tenths; the 4 = four-hundredths; the 6 = six-thousandths; the whole number = 125,000. To turn any vulgar fraction into a simple decimal fraction it must be possible to bring its denominator to a power of ten. Hence, any vulgar fractions whose denominator contains any prime factor other than 5 or 2 will always contain some element which is repeated to infinity, the process never ending. Thus $\frac{1}{3} = 0.3333$, etc. This is abbreviated as $\frac{1}{3}$, a dot being placed over the figure, and it is spoken of as 'point 3 recurring.' Sometimes a whole series repeats, e.g. $\frac{1}{7} = 0.142857$, and here a dot is placed over the first and last figures. Similarly, $\frac{1}{16} = 0.0625$. The theory of D. was first comprehensively stated by the Fr. mathematician Simon Stevin (*c.* 1548 *c.* 1620).

Decimation, Rom. military punishment, inflicting execution on every tenth man (chosen by lot) of a unit found guilty of a crime meriting death.

Děšín (*Ger. Tetschen*), (Czechoslovak *tn*) in the region of Ústí nad Labem (*q.v.*) near the Ger. border. It is a riv. port on the Labe (*see* ELBE) opposite Podmokly (*q.v.*), to which it is connected by bridge. Chemicals, textiles, and paper are manuf. Pop. 30,800.

Decius, Caius Messius Quintus Trajanus (AD 201-51), Rom. emperor, *b.* Budalia in Lower Pannonia. In 249 he was sent by Philip the Arabian (*see* PHILIPPUS, MARCUS JULIUS) to put down a rising of the Moesian army, but the soldiers proclaimed him emperor against his will and persuaded him to march on Italy. Near Verona they met Philip, who, after a fierce engagement, was killed. Throughout his short reign D. was in constant conflict with the Goths and barbarously persecuted the Christians. He was killed in battle against the Goths through the treachery of Gallus, who succeeded him as emperor.

Decius Mus, Publius: 1. Consul at Rome (340 BC) and commander of the Rom. army during the Lat. war. He was said to have been told in a nocturnal vision that the army of one side and the gen. of the other must perish and to have sacrificed his life next day in order to ensure a Rom. victory.

2. Son of the above, and 4 times consul. In order that the Rom. arms might triumph he *d.* with similar heroism at Sentinum, 295 BC.

Decize, Fr. *tn.* cap. of an arron., in the dept of Nièvre, on a rocky is. in the Loire, at the summit of which is an old castle. It has glass and iron works, and potteries. Pop. 4800.

Deck, term used in ship structure to indicate the floor or platform extending from side to side of the vessel. It is usually made by covering the D. beams with steel or planking. All D.s, particularly the upper or weather D., have a slight camber or slope towards the ship's side to afford strength and facilitate the dispersal of water. Three, 4 and even as many as 13 (the *Queen Elizabeth*) D.s are usual in modern ships, the protective D.s fitted exclusively to men-of-war being always heavily armoured.

— TOP OF FUNNEL

— TOP OF FUNNEL CASING

SPORTS
SUN
BOAT
PROMENADE
MAIN
A
B
RESTAURANT
C
D
E
F
G

WATER LINE

THE DECKS OF THE 'QUEEN ELIZABETH'

Decker, Thomas, *see* DEKKER.

Declaration, in an action at law, before the Judicature Act, 1873, simplified procedure, was a formal written statement of the plaintiff's case which was more detailed than the short particulars of the nature of his claim disclosed in the writ of summons. The D. could be struck out if its terms varied from the tenor of the writ; a similar rule applies to its modern equivalent, the statement of claim.

Declaration, Statutory, declaration in the form: 'I (*name*) do solemnly and sincerely declare that (*subject matter of declaration*), and I make this solemn declaration conscientiously believing the same to be true, and by virtue of the provisions of the Statutory Declaration Act, 1835.' By the Act this replaced an oath or affidavit for most official or departmental matters, including the verification of documents. The oath of a witness in

a court of law is not affected by the Act, which specially excepts it.

Declaration of Human Rights, Universal,
see HUMAN RIGHTS.

Declaration of Independence (U.S.A.), adopted in Congress, 4 July 1776, meeting in Philadelphia. It marks the emergence of the U.S.A. as an independent nation, and reads as follows: 'THE UNANIMOUS DECLARATION OF THE THIRTEEN UNITED STATES OF AMERICA.'

When in the Course of human events, it becomes necessary for one people to dissolve the political bands which have connected them with another, and to assume among the Powers of the earth the separate and equal station to which the Laws of Nature and of Nature's God entitle them, a decent respect to the opinions of mankind requires that they should declare the causes which impel them to the separation. We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain unalienable Rights, that among these are Life, Liberty and the pursuit of Happiness. That to secure these rights, Governments are instituted among Men, deriving their just powers from the consent of the governed. That whenever any Form of Government becomes destructive of these ends, it is the Right of the People to alter or to abolish it, and to institute new Government, laying its foundation on such principles and organising its powers in such form, as to them shall seem most likely to effect their Safety and Happiness. Prudence, indeed, will dictate that governments long established should not be changed for light and transient causes; and accordingly all experience hath shewn, that mankind are more disposed to suffer, while evils are sufferable, than to right themselves by abolishing the forms to which they are accustomed. But when a long train of abuses and usurpations, pursuing invariably the same Object, evinces a design to reduce them under absolute Despotism, it is their right, it is their duty, to throw off such Government, and to provide new Guards for their future security. Such has been the patient sufferance of these Colonies; and such is now the necessity which constrains them to alter their former Systems of Government. The history of the present King of Great Britain is a history of repeated injuries and usurpations, all having in direct object the establishment of an absolute Tyranny over these States. To prove this, let Facts be submitted to a candid world. He has refused his Assent to Laws, the most wholesome and necessary for the public good. He has forbidden his Governors to pass Laws of immediate and pressing importance, unless suspended in their operation till his Assent should be obtained; and when so suspended, he has utterly neglected to attend to them. He has refused to pass other Laws for the accommodation of large districts of people, unless those people would relinquish the right of Representation in the Legislature, a right inestimable to them and formidable to tyrants only.

He has called together legislative bodies at places unusual, uncomfortable, and distant from the depository of their Public Records, for the sole purpose of fatiguing them into compliance with his measures.

He has dissolved Representative Houses repeatedly, for opposing with manly firmness his invasions on the rights of the people.

He has refused for a long time, after such dissolutions, to cause others to be elected; whereby the Legislative Powers, incapable of Annihilation, have returned to the People at large for their exercise; the State remaining in the mean time exposed to all the dangers of invasion from without, and convulsions within.

He has endeavoured to prevent the population of these States; for that purpose obstructing the Laws for Naturalization of Foreigners; refusing to pass others to encourage their migration hither, and raising the conditions of new Appropriations of Lands.

He has obstructed the Administration of Justice, by refusing his Assent to Laws for establishing Judiciary Powers.

He has made Judges dependent on his Will alone, for the tenure of their offices, and the amount and payment of their salaries.

He has erected a multitude of New Offices, and sent hither swarms of Officers to harass our People, and eat out their substance.

He has kept among us, in times of peace, Standing Armies without the Consent of our legislatures.

He has affected to render the Military independent of and superior to the Civil power.

He has combined with others to subject us to a jurisdiction foreign to our constitution, and unacknowledged by our laws; giving his Assent to their Acts of pretended Legislation:

For quartering large bodies of armed troops among us:

For protecting them, by a mock Trial, from Punishment for any Murders which they should commit on the Inhabitants of these States:

For cutting off our Trade with all parts of the world:

For imposing Taxes on us without our Consent:

For depriving us in many cases, of the benefits of Trial by Jury:

For transporting us beyond Seas to be tried for pretended offences:

For abolishing the free System of English Laws in a neighbouring Province, establishing therein an Arbitrary government, and enlarging its Boundaries so as to render it at once an example and fit instrument for introducing the same absolute rule into these Colonies:

For taking away our Charters, abolishing our most valuable Laws, and altering fundamentally the Forms of our Governments:

For suspending our own Legislatures, and declaring themselves invested with power to legislate for us in all cases whatsoever.

He has abdicated Government here, by

declaring us out of his Protection and waving War against us.

He has plundered our seas, ravaged our Coasts, burnt our towns, and destroyed the lives of our people.

He is at this time transporting large Armies of foreign Mercenaries to compleat the works of death, desolation and tyranny, already begun with circumstances of Cruelty and perfidy scarcely paralleled in the most barbarous ages, and totally unworthy the Head of a civilized nation.

He has constrained our fellow Citizens taken Captive on the high Seas to bear Arms against their Country, to become the executioners of their friends and Brethren, or to fall themselves by their Hands.

He has excited domestic insurrections amongst us, and has endeavoured to bring on the inhabitants of our frontiers, the merciless Indian Savages, whose known rule of warfare, is an undistinguished destruction of all ages, sexes and conditions.

In every stage of these Oppressions We have Petitioned for Redress in the most humble terms: Our repeated Petitions have been answered only by repeated injury. A Prince, whose character is thus marked by every act which may define a Tyrant, is unfit to be the ruler of a free People.

Nor have We been wanting in attentions to our British brethren. We have warned them from time to time of attempts by their legislature to extend an unwarrantable jurisdiction over us. We have reminded them of the circumstances of our emigration and settlement here. We have appealed to their native justice and magnanimity, and we have conjured them by the ties of our common kindred to disavow these usurpations, which would inevitably interrupt our connections and correspondence. They too have been deaf to the voice of justice and of consanguinity. We must, therefore, acquiesce in the necessity, which denounces our Separation, and hold them, as we hold the rest of mankind, Enemies in War, in Peace Friends.

We, therefore, the Representatives of the united States of America, in General Congress, Assembled, appealing to the Supreme Judge of the world for the rectitude of our intentions, do, in the Name, and by Authority of the good People of these Colonies, solemnly publish and declare, That these United Colonies are, and of Right ought to be Free and Independent States; that they are Absolved from all Allegiance to the British Crown, and that all political connection between them and the State of Great Britain, is and ought to be totally dissolved; and that as Free and Independent States, they have full Power to levy War, conclude Peace, contract Alliances, establish Commerce, and to do all other Acts and Things which Independent States may of right do. And for the support of this Declaration, with a firm reliance on the protection of divine Providence, we mutually pledge to each

other our Lives, our Fortunes and our sacred Honor.

JOHN HANCOCK

Signers arranged by states:

New Hampshire—Josiah Bartlett, Wm. Whipple, Matthew Thornton

Massachusetts Bay—John Hancock, Saml. Adams, John Adams, Robt. Treat Paine, Elbridge Gerry

Rhode Island—Step. Hopkins, William Ellery

Connecticut—Roger Sherman, Sam'l Huntington, Wm. Williams, Oliver Wolcott

New York—Wm. Floyd, Phil. Livingston, Frans. Lewis, Lewis Morris

New Jersey—Richd. Stockton, Jno. Witherspoon, Fras. Hopkinson, John Hart, Abra. Clark

Pennsylvania—Robt. Morris, Benjamin Rush, Benja. Franklin, John Morton, Geo. Clymer, Jas. Smith, Geo. Taylor, James Wilson, Geo. Ross

Delaware—Caesar Rodney, Geo. Read, Tho. M'Kean

Maryland—Samuel Chase, Wm. Paca, Tho. Stone, Charles Carroll of Carrollton

Virginia—George Wythe, Richard Henry Lee, Th. Jefferson, Benja. Harrison, Thos. Nelson, Jr., Francis Lightfoot Lee, Carter Braxton

North Carolina—Wm. Hooper, Joseph Hewes, John Penn

South Carolina—Edward Rutledge, Thos. Heyward, Junr., Thomas Lynch, Junr., Arthur Middleton

Georgia—Button, Gwinnett, Lyman Hall, Geo. Walton.

The D. is important not only in the internal hist. of the U.S.A., but has had a considerable effect upon the political theory of other states. It inspired the thinkers of the Fr. revolution and influenced political reformers in Europe and S. America during the 19th cent. to a considerable extent.

Declaration of London, document which has for its object the international regulation of the mutual rights and obligations of belligerents and neutrals in time of war between any 2 or more of the signatories thereto. It was drawn up by the International Naval Conference held in London in 1909, at which plenipotentiaries of the great powers met, primarily for the purpose of coming to some agreement as to the recognised rules of international law in regard to the estab. of an international prize court. It contains 71 articles, the most important being those relating to contraband (q.v.). In regard to blockade, the D. of L. repeats the Declaration of Paris (q.v.), and establishes that a blockade must not extend beyond the ports and coasts belonging to, or occupied by, the enemy, and also that it must be applied impartially to the ships of all nations. When the First World War broke out the D. of L. had not been ratified by Great Britain, but immediately afterwards it was adopted by Orders in Council, with certain modifications, chiefly referring to conditional contraband and the doctrine of continuous voyage (see BLOCKADE). As the war progressed the

D. was found to be extremely unsatisfactory and, after further modifications, was eventually dropped altogether by the Maritime Rights Order in Council of 7 July 1916. At the outbreak of the war the other belligerents followed much the same course as Great Britain, but gradually the D. was modified out of recognition, and before the end of the war it had ceased to be an instrument possessing binding force. See also CONTRABAND.

Declaration of Paris. The object of this D., which was adopted by the leading European powers at the Congress of Paris in 1856, was to assimilate the principles of the maritime law of the different signatories on an outbreak of war. The prin. articles declare: (1) Privateering is, and remains, abolished; (2) a neutral flag covers enemy goods, except contraband of war; (3) neutral goods, except contraband of war, are not liable to confiscation under a hostile flag; (4) blockades to be binding must be effective. The result of the fact that since 1856 every civilised state, except the U.S.A., Spain, Mexico, and Venezuela, has signed the declaration is that privateers can only be employed by the signatories during a war with one of the four outstanding states. On the outbreak of the Hispano-Amer. war of 1898, the gov. of the U.S.A. bound itself to observe the articles of the declaration during the war, while Spain agreed to become bound by articles (2) and (3), with a reiteration that the D. was not binding upon her. The U.S.A. also intimated at the outbreak of the Civil war that they would observe the D.

Declaration of Rights, see BILL OF RIGHTS.

Declarations of Deceased Persons. It is axiomatic in the Eng. law of evidence that hearsay is inadmissible as proof. The best evidence is the testimony of him who made the statement. But there are certain cases where it is impracticable to adhere to the rule, and among those excepted cases are the oral or written D. of D. P. Statements made by D. P. relevant to prove any fact in issue or any fact regarded as relevant to any fact in issue include the following: (1) A declaration or statement made by a person who can be shown to have been in actual danger of death, and to have given up all hope of recovery at the time of making the declaration. Such a declaration is only relevant in the trial for the murder or manslaughter of the declarant; and to be admissible the declaration must have had reference either to the cause of death or to the attendant circumstances thereof. (2) A declaration against the pecuniary or proprietary interest of the declarant. It must be shown that the deceased had no interest in misrepresenting the matter in question, that he made the statement at or very shortly after the time when the act occurred which is sought to be proved, and that he had peculiar means of knowing the matter stated. (3) Statements made by a person in the ordinary course of business or in the discharge of professional duty. (4) D. as to pedigree,

relating to the pedigree of some person of whom the declarant was a legitimate blood relation. If made after the commencement of the action they would be inadmissible in evidence. (5) In cases where a will has been lost, or there is a suggestion that a particular will was a forgery, or obtained by wrongful means, statements made by the testator concerning the contents of his will or the manner in which he intended to dispose of his property. (6) Statements relating to the existence of a public or general right, e.g. a right of way. For the purpose of perpetuating the testimony of a person whose death is apprehended, the criminal law allows his deposition to be taken down in writing and afterwards used in evidence on proof that the deponent is either dead or unlikely ever to be able to travel or give evidence.

Declarator. D.s or declaratory actions form one of the three classical divisions of Scottish legal actions. A declaratory action is one in which some right, personal or proprietary, which is actually infringed or threatened is sought to be declared in favour of the pursuer (Eng. plaintiff), but where nothing is sought to be paid or performed by the defender (Eng. defendant). Illustrations are D.s of marriage, of bastardy, and of irritancy (loss of feu rights by non-payment of feu-duty for 2 full years). D.s may be brought either in the Court of Session or in the sheriff courts, except that D.s of marriage or nullity and D.s relating to personal status may not be brought in the latter court.

Declension (Lat. *declentio*, a turning or leaning away, i.e. the form assumed by words as they fall away from the nominative). In grammar the term signifies the inflections or changes a word receives according to its meaning or relation to other words in a sentence. Eng. has no proper D.s, only traces of a dative and genitive, neither has it genders, except in pronouns of third person. Sanskrit has 8 cases, Lat. 6, and Gk 5. Lat. cases are nominative, vocative, accusative, genitive, dative, ablative. Gk has no ablative; Sanskrit adds locative. Instrumental case-endings are gradually being dropped, and prepositions used instead, as in Fr. and It. Agglutinating languages are usually prolific in cases: the Finnish has 15, the Magyar has 20.

Declination. The angle between the magnetic meridian (vertical plane through axis of a compass needle placed at any point) and the geographic meridian (vertical plane through that point and the poles of the earth) at any point is called the D. of that point. The fact that a compass needle does not point true N. was first observed by Columbus in 1492. In Great Britain the compass needle points W. of true N. At Abinger, the magnetic station connected with the Royal Greenwich Observatory, the D. (mean ann. value) in 1954 was 8° 50' W. This D. is not constant, but changes from year to year. This secular change was first noticed by Burroughs in 1580; for example, in that year the D. at London

was 11° E., in 1657 it was nil, while in 1816 it had attained a maximum westerly value of 24° 30'. Since that date it has been gradually diminishing again; 320 years are required, it is computed, to give a complete cycle of secular changes in the D. See ISOLINIC; AGONIC LINES; MAGNETISM; DIP.

Declination, in astronomy, the complementary term to right ascension (see ASCENSION, RIGHT). It is the distance of a heavenly body from the equator, and is measured on the arc of the great circle which passes through the body and the poles. It is N. or S.—frequently denoted by + and — respectively—according to the side of the celestial equator in which the body is situated.

Declination, Magnetic, or magnetic variation, is the angle between the magnetic meridian (q.v.) and the geographical meridian. See GEOMAGNETISM; MAGNETISM, *Terrestrial Magnetism*.

Decoction (Lat. *de*, down, and *coquere*, to cook, boil), term used in pharmacy for the process of forming a solution by boiling an organic drug in water. There are as a rule about 5 grains of drug to 100 cc. of D. The drug may sometimes be boiled in oil.

Decolic Acid, see CAPRIC ACID.

Decorated Style, see ENGLISH ARCHITECTURE.

Decoration Day, or **Memorial Day**, ann. holiday (30 May) appointed by all the N. and some of the S. states of America for the purpose of decorating the graves of, and commemorating, the soldiers who lost their lives in the civil war.

Decorations, see MEDALS; ORDERS OF KNIGHTHOOD.

Decorations for War Services. *First World War*. The total number of D. or honours conferred on members of Brit. and Indian forces for services in the field and for services in connection with the war between Aug. 1914 and the termination of hostilities was upwards of 450,000. This number was made up for the most part of D. for services in the field, those 'in connection with the war' being the official description in the case of awards in respect of services during air raids, coastal bombardments, etc., or services outside a recognised theatre of military operations. For these latter services some 13,000 D. were given. Included in the total were also 5407 awards by way of promotion. The following were the numbers of the various awards made: V.C., 579; V.C. (bars), 2; G.C.B., 14; G.C.M.G., 22; G.B.E. (military div.), 5; K.C.B., 158; K.C.M.G., 197; K.B.E. and D.B.E., 74; C.B., 1052; C.M.G., 2659; C.B.E. (military div.), 1095; D.S.O., 8991; D.S.O. (bars), 784 (one of these was given for bringing down a Zeppelin airship in England); O.B.E. (military div.), 2664; B.E.O. (civil div.), 902; Red Cross and bars, 5986 (of which about 1000 were for field services); M.C., 37,041; M.C. (bars), 3125; D.C.M., 24,571; D.C.M. (bars), 478; M.M., 115,429; M.M. (bars), 5965; M.S.M. and bars, 245,508; Medals, B.E.O., 424. The total number of officers and men who passed through the Brit. Army during the

war was approximately 6,000,000. In the S. African war, when the total number of troops in the field was 448,435, the number of D. or honours was 3714, made up as follows: V.C., 79; G.C.B., 3; K.C.B., 25; C.B., 292; G.C.M.G., 4; K.C.M.G., 8; C.M.G., 110; D.S.O., 1143; and D.C.M., 2050. In the First World War the promotions for services in the field included 4 promotions to field marshal's rank, viz. Lord Haig, Lord Allenby, Lord Plumer, and Sir Wm Robertson, and, for services outside a theatre of war, 1 such promotion, viz. that of Sir Henry Wilson.

Second World War. The following is a detailed list of major wartime awards to officers and men of the R.N., R.N.R., R.N.V.R., Royal Marines, and Dominion navies: V.C., 24 (officers, 18; men, 6); G.C., 31 (officers, 26; men, 5); D.S.O., 686; D.S.O. (bars), first bar, 110; second bar, 24; third bar, 3; D.S.C., 4529; D.S.C. (bars), first bar, 425; second bar, 14; third bar, 1; Albert Medal, 35 (officers, 16—1 in gold; men, 19—2 in gold); C.G.M., 70; D.S.M., 6998; D.S.M. (bars), first bar, 152; second bar, 4; third bar, 1; G.M., 136 (officers, 85; men, 51); G.M. (bars), first bar, 16 (officers, 14; men, 2); B.E.M., 2688; B.E.M. (bars), 3; G.C.B., 10; K.C.B., 57; C.B., 159; G.B.E., 6; K.B.E., 59; D.B.E., 2; C.B.E., 362; O.B.E., 970; M.B.E., 1128. The following honours and awards went to personnel of the merchant navy and fishing fleet: G.C., 5; Empire Gallantry Medal (now replaced by G.C.), 1; knighthood, 10; C.B.E., 50; O.B.E., 1077; M.B.E., 1291; D.S.O., 18; D.S.C., 213; Albert Medal, 11; G.M., 49; D.S.M., 421; Sea Gallantry Medal, 530; M.M., 16,900; D.C.M., 1850; D.C.M. (bars), 10; B.E.M., 1717; Mention in Dispatches, 994; Commendations, 2568. Promotion, admiral of the fleet: Sir Charles Forbes, Viscount Cunningham of Hyndhope, Lord Tovey, Sir James Somerville, Sir John H. D. Cunningham, and Lord Fraser of N. Cape. Up to the end of 1945 the army awards (excluding campaign stars, defence and general war medals) were 51,800. The number of V.C.s was 181 (including 1 bar); D.S.O., 4462; D.S.O. (bars), 557; M.C., 10,386; M.C. (bars), 480. The highest number of officers and men serving in the army at any time during the last war was 2,931,000 (plus 223,000 women). This means that a total of over 4,000,000 passed through the army. The home guard at one period numbered 1,700,000. Many of these were during some of their time in the army. The total who served in the army and home guard at one time or another was over 5,000,000. The army's entitlement to campaign stars, defence medals, and war medals was over 10,000,000. Promotion to field marshal: Lord Ironside, Earl Wavell, Viscount Alanbrooke, Viscount Alexander of Tunis, Viscount Montgomery, Lord Wilson, and Sir Claude Auchinleck. The following awards were made to air force personnel, including dominion and colonial, up to the end of 1945: V.C., 27 (3 subsequently to 1945, making a total of 30); G.C., 19; G.M., 151; B.E.M., 1192; D.S.O., 1078; D.S.O. (bars), 92; C.G.M., 113; D.F.C.,

18,889; D.F.C. (bars), 1560; D.F.M., 6363; D.F.M. (bars), 57; M.C., 61; M.M., 118; A.F.C., 1709; A.F.C. (bars), 28; A.F.M., 244. The following honours were awarded: G.C.B., 9; K.C.B., 29; C.B., 195; G.B.E., 4; K.B.E., 41; D.B.E., 3; C.B.E., 452; O.B.E., 1155; M.B.E., 1695; R.R.C., 24; R.R.C. (bars), 2; associate R.R.C., 111; mentions, 37,283; commendations, 908. Promotion to marshal of the R.A.F.: Lord Nevill, Viscount Portal of Hungerford, Lord Tedder, Lord Douglas of Kirtleside, and Sir Arthur T. Harris.

Decort, Frans (1834-78). Flem. lyrical poet, b. Antwerp. He pub. the well-known Flem. almanac, *Jan en Alleman*, and trans. some of Burns's poems into his own tongue. His prin. works are *Leideren*, 1857, 1868, and *Zingzang*, 1866.

Decoy. This word has had a complicated hist. It appears in Eng. first as coy and coyduck, from the Dutch *kooi*, which is ultimately connected with Lat. *cavea*, a cave or hollow. The *de* at the beginning of the word is considered by some authorities a corruption of duck-coy, by others the Dutch article *de*, and by others a corruption of the Dutch *eende-kooi*—*eende* being the Dutch for duck. The word was also used in a particular sense to denote a swindler, and also as the name of a game of cards, as early as 1550. A *D.* is therefore an enclosure for catching ducks or other wild fowl, bringing them within range of a gun, hence any trap or enticement into a place of danger. *D.s.* are, as a rule, made on the following plan: Long tunnels lead from the sea, channel, or estuary into a pond or pool; these are covered with an arched net which gradually narrows in width. The ducks are enticed into this by a tame trained bird also known as a *D.*, or *D. duck*. Trained dogs are also used. Once the ducks are along the narrow end of the channels or pipes they are easily caught. In America, and sometimes in England, artificial *D.s.* are used. These are generally made of wood. The *D.* is placed on the water as if it were feeding. This attracts the other wild fowl within range of the concealed sportsmen. Many books have been written on the art of decoying ducks and wild fowl, the best being Sir R. W. Payne Gallwey's entitled *The Book of Duck Decoys*, 1886.

Decree, term formerly given to any adjudication by a court of equity in contradistinction to a judgment in a common law (q.v.) court. The plaintiff formulated a written statement of his case in a long technical document called a bill, and the defendant put in a written answer on oath. The *D.* which was pronounced upon the bill and answer was framed so as to meet all the exigencies of the case. Since the Judicature Act, 1875 (*see also* *Equity*), an adjudication by a judge of the chancery div. upon an action begun by originating summons is generally called a judgment, and an order made in a motion, petition, or *ex parte* application is referred to simply as an order. The term *D.* has now become more or less restricted to adjudications in administration, partnership, and foreclosure actions in the

chancery courts. The term *D.* has also a well-known meaning in connection with interim and final orders in the divorce court, a *D. nisi* being the judicial pronouncement of a divorce or judicial separation to take final effect 6 weeks later as a *D. absolute*, if the Queen's Proctor does not intervene. A similar distinction applies to a mortgagee's foreclosure action, the *D. nisi* being made absolute where the mortgagor does not redeem within the time allowed him by the court. The *D.s.* of the pope, which are called decretals, may be defined as decisions of the popes in matters of eccles. law. The *D.s.* of the pope retained their authority as law till the 14th cent., when the power of the holy see began to decline. From the 5th cent. the decretals of the popes have been collected, and there are sev. collections of them. *See also* CANON LAW; COMMON LAW; ISIDORIAN DECRETALS.

Decrescent, or Decrement, term applied in heraldry to the waning moon, i.e. its horns turned to the sinister (q.v.).

Decretals, laws added to the canon law of the Church of Rome, consisting of judicial replies by the popes to cases submitted to them for adjudication. *See also* ISIDORIAN DECRETALS.

Decretals, False, *see* ISIDORIAN DECRETALS.

Decroly, Ovide (1871-1919), Belgian doctor and teacher. In 1910 he opened a school for backward and abnormal children in Brussels, and used the experience he gained in a school for normal children in 1907. He agreed with the assertion of Dewey, the Amer. educationist, that 'education is not a preparation for life; it is life,' and modelled his teaching on a system of 'centres of interest' (*méthode globale*). The system avoids the subdivision of a scheme, with scattered headings, and substitutes groups of ideas as a foundation for lessons over a given period. These groups, previously linked, represent an uninterrupted sequence of themes, which awaken the interest and invite the co-operation of the child. *D.'s* experiences and conclusions are similar to those of Dr Maria Montessori (q.v.). *See* Amélie Hamal de (trans. Jean K. Hunt), *The Decroly Class*, 1925.

Dedeagach, *see* ALEXANDROUPOLIS.

Dedham: 1. Tn of Essex, England, on the Stour, in the midst of the Constable country, and notable for the vale of *D.*, subject of that painter's art. Once the centre of the Flemish cloth trade. Pop. 1690.

2. Co. seat of Norfolk co., Massachusetts, U.S.A., situated on the Charles R., 10 m. SW. of Boston. Fisher Ames was b. here. The prin. manufs. are envelopes, paper goods, and lightning rods; there is a printing industry. Fairbanks House (built 1636) is considered the oldest frame house in the U.S.A. Pop. 18,500.

Dedication, *see* CONSECRATION.

De Donis Conditionalibus (concerning conditional grants) Statute. This statute, passed in 1285, was intended to prevent the heirs to entailed estates from selling

or otherwise disposing of their landed estates as soon as heritable issue was *b.* to them. This they were enabled to do in spite of the intention of the grantor to tie the estate up in a strict line of descent, by reason of the judicial construction of a grant by A to 'B and the heirs of his body' as a grant of the fee simple (i.e. entire disposable estate) conditionally upon the birth of issue. The result of this interpretation was that the tenant-entail could not only bar his issue and the grantor's right to the reversion on failure of issue, but could evade his feudal services. The D. D. enacted that the will of the grantor should be observed, but failed in its purpose as soon as recourse was had to the practice of barring the entail by fines and recoveries (see COLLUSIVE ACTIONS).

Deduction, in logic, see LOGIC.

Dee, John (1527-1608), mathematician and astrologer, *b.* London, educ. at Cambridge and Louvain. Edward VI appointed him to a living and gave him a pension; consequently in Mary's reign he was persecuted and narrowly escaped with his life. Things changed, and under Elizabeth he obtained office as intellenger. For 9 years he was warden of Manchester College. During the queen's illness he was summoned for joint consultation on her recovery with the Ger. physicians. He was commanded to draw up a geographical chart of crown lands discovered by Englishmen. This is now in the Brit. Museum.

Dee: 1. Riv., 70 m. long, in N. Wales and Cheshire, rises in Merioneth, and flows into the Irish Sea by way of a wide estuary. The dangerous rapidity with which the tide rises in this neighbourhood is told of by Kingsley in his *Sands of Dee*. From Chester to the estuary there is a tidal canal 6 m. long.

2. Scottish riv. rising in the Cairngorm Mts (q.v.) from a spring on the Braemar plateau at 4000 ft. and flowing through Braemar, Ballater, Aboyne, and Kincardine (O'Neil, entering the sea at Aberdeen. Near Braemar it bursts through a rock gut called the Linn of D.). Balmoral Castle is on its banks. The salmon fisheries are valuable.

Deed (Lat. *factum*; Norman-Fr. *fact*), instrument in writing or print, upon paper or parchment, duly sealed and delivered, which operates either to pass an interest in property or to confirm a pre-existing contract by which such an interest passes, or to bind a person thereafter to do, or abstain from doing, something. D.s are of 2 kinds, indented and poll. The term indenture implies that the D. is in 2 parts or similar copies, and that the 2 parts were cut in a serrated or irregular line so that when placed together subsequently their physical correspondence would evidence the authenticity of each copy. A D. poll is cut even at the edges, and usually contains but 1 part, being the D. of 1 person or party only. The modern mode of executing a D. is by signing, sealing, and delivering. The manner of delivering a D. is for the executing party to say 'I deliver

this as my act and deed.' Sealing and delivery are essential to the validity of a D., but signing only if expressly made so. A D. which is delivered to a third person, not a party to it, to be given up to the parties involved on the fulfilment of a condition, is termed an *escrow*. The requisites of a valid D. in the U.S.A. are practically the same as in the case of any other contract, but the appointment of an attorney to execute a D. for another must as a rule be executed with the same formalities requisite to the D. itself. Seals, or whatever equivalent may be used therefor, are required in Alaska, Connecticut, Florida, Illinois, Maine, Massachusetts, Missouri, New Hampshire, New Jersey, New York, Pennsylvania, Virginia, and other states. In nearly all the states D.s by corporations must be under seal.

Deemster, title of the 2 chief judges in the Isle of Man, whose duty it is to pronounce doom or sentence. In Scotland it was formerly the title of an inferior official attached to the high court of justiciary, who was also executioner, and who had to recite the recorded judgment.

Deep-sea Deposits, see OCEAN.

Deep-sea Exploration, see ABYSSAL FAUNA; CHALLENGER EXPEDITION; DEPOSITION; DISCOVERY COMMITTEE.

Deep Sea Fisheries, see FISHERIES.

Deeping, George Warwick (1877-1950), novelist, *b.* Southend. Educ. at Merchant Taylors' and Cambridge, he studied medicine and for a time practised as a doctor. His earliest books were historical romances. After the first World War, in which he served with the R.A.M.C., he wrote his best-known novel, *Sorrell and Son*, 1925, which was followed by *Old Pylbus*, 1928; *Roper's Race*, 1929; *Exiles*, 1930; *Seven Men Came Back*, 1934; *Shabby Summer*, 1939; *Corn in Egypt*, 1941; and *Laughing House*, 1947.

Deer, or Cervidae, form a large family in the group Pecora of the Artiodactyla, in which are also classed the giraffes, oxen, antelopes, sheep, and goats. The characteristic which distinguishes the D. from all other ruminants is the presence of antlers in the males; in the reindeer only they are common to both sexes, and in the genera *Moschus* and *Hydropotes* they are lacking. These antlers are deciduous, falling every year in the rutting season, and consist of bony processes of the frontal bone, covered while growing with a sensitive, vascular, velvety skin. The D. are known fossilised from the Miocene, and there are about 60 living species which inhabit Europe, Asia, and America. *Moschus*, the musk-D., is an aberrant Asiatic genus, remarkable for the presence of a gall bladder as well as the absence of antlers; *Cervus* contains well-known species, such as the wapiti, red D., and the extinct Irish elk. The roe D., or roebuck (*Capreolus capreolus*), is the smallest of the 3 wild D. of Great Britain, to be found in the woods almost all over Scotland, New Forest, and the Lake Dist. That is to say, the roe have managed to hold on to existence over vast areas of country in which their larger cousins, the

red D. and the fallow D., were very nearly wiped out. *Rangifer*, the reindeer, and *Alces*, the elk, or moose, are circumpolar; *Muntiacus*, the muntjac, is indigenous to Asia; *Hydropotes*, the water-D., is a Chinese genus.

Kinds of Deer.—There are various kinds of D., such as the wapiti or Amer. D., the lambu D. of India, the Himalaya D., and the red D., which is the kind generally hunted in the Brit. Isles. Other species of D. in Great Britain are the fallow D. and the roe D. The red D. is of a reddish-brown colour, while from the tail underneath the body the colour becomes lighter. The red D. has ever been known by his horns, which differ materially from those of all other kinds of D. The horns consist of a beam from which points or processes project, a 12-pointer being known as a 'royal' stag. The number of these points determines the age. The yearling D. has no horns, but at 2 years old a short spire is thrown out. The age of the D. can also be deduced from the impression of its foot in the ground. If the impression measures full 2 in. at the heel he is 'warrantable,' if more he is large, heavy, and old; and if less, he is too young. The tread of a hind is much narrower than that of the male, particularly at the toe, while the hart's is broad and round at the point. The mark of a D.'s tread is called his slot; his haunt is termed his lair; where he lies down, his harbour or bed; where he rolls himself, his soiling pool; and his breaking place over a hedge, his rack. When he goes to water it is termed going to soil; if he is headed back he is blanched; and if he stops in a riv. or lies down in a pool during the chase it is called sinking himself. Stags engage in ferocious single combat for predominance in a herd.

Deer-stalking.—Method used in approaching D. without being observed by the animal. To stalk is to approach unawares. In England this method of stalking the D. in order to shoot it is rarely adopted, but in Scotland it is generally in vogue. D.-hunting in England is chiefly confined to the W., in the cos. of Devon and Somerset, and also in the New Forest. In N. America the method of stalking is largely used.

History.—The chase of the stag was considered one of the most princely and royal sports, and has existed from time immemorial; but whether it was conducted on its present lines until Queen Elizabeth's reign is doubtful. Historical records prove conclusively that there was kennelled at Simonsbath in this reign a pack of stag-hounds which hunted the D. on a similar system to that now in vogue. The method of stalking was not introduced until years later.

Methods of Hunting.—(1) By driving. (2) By stalking. Where the country was partially covered with wood, the forests were 'driven,' and the sportsmen occupied passes where they took their chance of sport, and this method is resorted to generally in the forest of Glengarry (Scotland) and in other places. But generally speaking the system has given

way to the more exciting amusement of stalking. D., like other animals, seem to foresee change of weather. At the approach of a storm they leave the higher hills and descend to the low grounds, generally 1 or 2 days before the change. On the approach of a thaw they leave the low lands and go to the mts. They never perish in snowdrifts, as sheep do, but keep to the bare ground and feed on the tops of heather. When herds of D. are driven they follow each other in a line, so that when they cross the stalker it is customary for him to lie quiet and suffer the leaders to pass before he raises his rifle. If he were to fire at the first that appeared, he would probably turn the whole of them back. Or if he were to run forward injudiciously after a few had passed, the remainder, instead of following the others in a direct line, would not cross him except under particular circumstances and disposition of ground, but would bear off and join the others afterwards. When D. are hard pressed by a dog, they run in a compact mass, the tall ones endeavouring to wedge themselves into it. They will also run in this manner when pressed by drivers on the open moor. D., except in embarrassed situations, always run up wind, and this instinct is strongly implanted in them. Thus they go forward over hill-tops and unexplored ground in perfect security, for they can smell the taint in the air at an almost incredible distance. On this account they are fond of lying in open quarries where the swells of the wind come occasionally from all quarters. By clever arrangement on the part of the stalkers, and by employing men in concealed positions to give them their wind, the D. may be driven down wind, and in certain cases they may easily be sent by a side wind to that side of the forest which they consider as their sanctuary. In large forests the method of stalking with the assistance of hillmen is generally adopted. These are placed at long intervals and help to drive the D., if possible, against the wind. This method, however, cannot be adopted in small forests, as too frequent a disturbance would make the D. forsake the ground. Trained dogs are used to chase the D. after he has been wounded.

Weapons.—The destruction of the woods, the substitution of the gun for the bow and arrow, formed quite an epoch in the habits and size of the D., as well as in the mode of killing. The bow had one advantage over the gun, viz. that of being noiseless, so that a stalker well concealed might repeat shots without giving much alarm. In Sutherland firearms were unknown until about the latter end of the 16th cent., when a large kind of blunderbuss, named by the people *glasnabhean*, was introduced. These, however, did not supplant the bow and arrow until after the middle of the 17th cent. Spears were also formerly used, chiefly for killing wounded D. See Charles IX. of France, *La Chasse royale*, 1858; A. G. Cameron, *Wild Red Deer of Scotland*, 1923; H. Fraser, *Amid the High Hills*, 1923; and Lord Latymer,

Deer: *Stalking in Scotland and New Zealand*, 1935.

Deer, Old, par. and vil. in Aberdeenshire, Scotland, 9 m. from Peterhead. The ruins exist of St Drostan's Abbey of D., which was founded in 1218-19. Near here Robert Bruce defeated the Comyns. Area 27,363 ac.; pop. 4000.

Deerfield, tn. of Franklin co., Massachusetts, U.S.A., on the D. R., 16 m. N. of Northampton; much visited by tourists, it comprises sev. vills., many of the houses dating from the 18th cent. There is a collection of colonial and Indian relics. For many years D. was the frontier post of New England on the NW. It was repeatedly taken by the Indians. On 29 Feb. 1704 300 Indians carried off John Williams, minister of the gospel in D., and 100 of his neighbours, to Montreal, murdering 19 by the way, and burning D. before starting. D. academy for boys is here. Pop. 3086.

Deerhound, dog resembling the greyhound in general appearance, from which it probably sprang. D.s are used particularly in deer-stalking, and are very quick runners with a keen scent. The chief points are as follows: head long and tapering, broadest at the ears, with a flat skull and a black nose (though the nose may be blue in the blue-fawn variety); ears small, soft, and silky, set on high and folded back, and in colour dark, preferably black; neck long, with a good mane, with sloping shoulders and a prominent nape; stern long and tapering, well covered with hair; chest deep and broad; loins well arched and drooping towards the tail, with a great breadth across the hips; legs broad and flat; forelegs straight with arched toes. The height varies from 28 to 30 in., the females being as small as 26 in.; weight from 80 to 105 lb., females from 70 to 80 lb.

Deerhurst, vil. and par. of Gloucestershire, England, 4½ m. from Tewkesbury. St Mary's church belonged to a Saxon monastery, and much Saxon work is incorporated in the fabric. Nearby, attached to a half-timbered house, is the so-called Odda's chapel, dating from 1056. Pop. 617.

Defamation is a statement pub. about a person which exposes him to hatred, ridicule, and contempt, and lowers him in the estimation of right thinking members of society generally. Defamatory statements are either libels or slanders, the distinctions being: (1) a libel is written or in some permanent form, a slander is D. by spoken words or in some transitory form, such as gestures (the broadcast of words by wireless is, however, statutorily defined as libel); (2) the pub. of a libel is presumed to have caused damage, but, with the exceptions mentioned below, a slander must be proved to have caused *actual* damage. Slanders which are actionable, without proof of *actual* damage, include (a) words calculated to disparage a person in any office, profession, calling, trade, or business held or carried on by him at the time of pub., whether or not spoken of him in connection with his office, etc.; (b) words imputing the commission of

a criminal offence punishable by imprisonment; (c) words imputing certain contagious diseases (e.g. venereal disease); (d) words imputing adultery or unchastity in a woman or young girl. With certain exceptions, defamatory statements are actionable whether or not pub. without intent to defame. A defamatory statement to be actionable civilly must be 'published' in law (i.e. communicated to a third person). A libel which is likely to cause a breach of the peace can form the subject of a criminal prosecution as well as a civil action for damages. A defamatory statement to be actionable must be capable of being understood to refer to the plaintiff.

Defences in actions for D. include: (1) justification (i.e. the defamatory statement is substantially true); (2) the words are fair comment made without malice on a matter of public interest; (3) the words complained of are privileged (*see below* and PRIVILEGE); (4) the express or implied assent of the plaintiff to the defamatory statement; (5) accord and satisfaction (i.e. the plaintiff has previously accepted an apology and/or compensation in full satisfaction); (6) the defamer, having pub. the words innocently without intending to refer to the plaintiff, has, at the earliest possible moment, 'tendered an offer of amends' under section 4 of the Defamation Act, 1952 (*see below*).

Certain statements, even if pub. maliciously or spitefully, are absolutely privileged from claims for D. These include statements made by judges, counsel, or parties in judicial proceedings; statements made by one officer of state to another in course of official duties; statements made in Parl. proceedings; reports and papers issued by order of Parliament; fair and accurate contemporaneous broadcast or newspaper reports of judicial proceedings in the U.K. The following are entitled to 'qualified privilege' (i.e. the privilege is lost if the statements were made with malice): (1) communications on matters between persons having a legitimate common interest therein; (2) fair and accurate reports of Parl. proceedings; (3) fair and accurate reports of judicial proceedings not made contemporaneously; (4) extracts from registers kept pursuant to Act of Parliament and which the public are entitled to inspect; (5) extracts from papers pub. by order of Parliament; (6) fair and accurate newspaper reports of the decisions and proceedings of certain bodies specified in the Defamation Act, 1952. Irrespective of any defamatory content, a newspaper is not obliged to publish an explanation or correction of fair and accurate reports of, *inter alia*, proceedings of any dominion or colonial legislature or court, or any notice or advertisement pub. by the authority of any court within the U.K. Certain classes of reports lose their privilege if a request to publish a reasonable explanatory or contradictory statement is refused or not adequately complied with. Examples of such reports include fair and accurate reports of the decisions of certain

professional bodies and trade associations and of the proceedings of public meetings, the meetings of local authorities, tribunals set up by statute, and of the general meetings of public companies.

The Defamation Act, 1952, to some extent protects the 'unintentional' publication of defamatory statements. At common law, if a person publishes words which are not apparently defamatory, and not intended to refer to any particular person, he is nevertheless liable in damages to anyone who can prove that his circumstances are such that those who know him understood the words to refer to him in a defamatory sense. Moreover, a person who can be identified with a fictitious character in a novel to whom defamatory references are made can sue for damages for D. Under the Defamation Act, 1952, however, a person who publishes a defamatory statement in such circumstances may make an offer of amends expressed to be for the purposes of section 4 of the Act. This is an offer to publish a suitable correction and apology and to withdraw or attempt to procure from circulation any copies of the offending statement. The offer must be accompanied by an affidavit specifying the facts relied upon to show that the words were published innocently about the person aggrieved. A person whose offer is accepted and performed cannot then be sued for D. If the offer is made promptly and is not withdrawn, the defamer will have a good defence to proceedings for D. In cases not covered by the Act, an apology is no defence but may mitigate damages. See O. S. Hickson and P. F. Carter-Ruck, *Law of Libel and Slander*, 1953; J. C. C. Gatlley, *On Libel and Slander*, 4th ed., 1953.

Default, failure to perform some legal or quasi-legal duty. For example a defaulting trustee is one who makes a wrong use of money entrusted to him or who fails to render an account of same.

Defeasance, in law, is either a condition relating to a deed, which on fulfilment defeats the force or operation of the deed and renders it void, or is itself a collateral deed made synchronously with a deed of conveyance, containing conditions on the performance of which the estate created by the conveyance may be defeated. D.s of freehold estates must be by collateral deed. D.s may also be of terms of years, executory interests, bonds, and recognisances. D.s as to title are now never used in practice, the necessary conditions always being inserted in the body of the deed.

Defence, Civil, see CIVIL DEFENCE.

Defence, Ministry of. The creation in Britain of a Minister of Defence 'responsible to Parliament for certain subjects affecting the 3 services and their supply' was announced in a White Paper issued on 5 Oct. 1946. Although it was recognised that the Prime Minister must retain the supreme responsibility for defence, the appointment of a Minister of Defence other than the Prime Minister to be in charge of the formulation and general application of a unified policy relating to

the Armed Forces of the Crown as a whole and their requirements was to be expected as a by-product of war experience. The Minister is responsible for the apportionment, in broad outline, of available resources between the 3 services, and the settlement of questions of general administration on which a common policy for the 3 services is desirable. The Prime Minister remains Chairman of the Defence Committee. The Chairman, Chiefs of Staff Committee, jointly with the three Chiefs of Staff, is the professional military adviser of the Minister of Defence, the Defence Committee, and the Cabinet. The Joint War Production Committee, under a permanent official chairman, assists the Minister of Defence in the correlation of production programmes of the services. In connection with his function of framing a general policy to govern research and development, the Minister of Defence is assisted by the Defence Research Policy Committee, its Chairman being the Scientific Adviser to the Minister of Defence. Since the Ministry of Defence was set up on 1 Jan. 1947, the Minister has assumed responsibilities arising from the United Kingdom participation in international defence organisations, e.g. under the Brussels Treaty Organisation, the North Atlantic Treaty Organisation, Western European Union, and the South East Asia Collective Defence Organisation.

Defence Committee, presided over by Prime Minister, consists of ministers, amongst whom are those of Defence, of Supply, and of Labour, the Chancellor of the Exchequer, First Lord of the Admiralty, and the secretaries of state for War and Air, who debate the problems of defence. It is advised by a sub-committee consisting of the joint services chiefs-of-staff. See also COMMITTEE OF IMPERIAL DEFENCE.

Defence Medal, decoration of the Second World War, granted for 3 years' service with forces in non-operational areas subjected to air attack or closely threatened: for 1 year's non-operational service with the forces overseas from or outside the country of residence; for 3 years' civil defence or other specified civilian service in military operational areas and for civil defence service in non-operational areas subjected to air attack or closely threatened. The time qualification in the case of mine and bomb disposal units of the forces was 3 months. The centre of the ribbon is flame-coloured and the edges are green, symbols of the enemy attacks on our green and pleasant land. Two black stripes represent the black-out. Those qualified for any one of the campaign stars could be granted this award in addition. Members of civilian services in the U.K. eligible for war chevrons for war service in the U.K. were entitled to the medal, as also were civil defence workers in Gibraltar and Malta, etc. The medal was granted without regard to the period of service to those who might have received an award or commendation for brave conduct or commendation for valuable service in the air, provided that the recipient, when the

commendation was earned, was serving in a category eligible for the medal.

Defence Mobilisation, Office of, created by President Truman, in executive order of Dec. 1950. First director: Charles Edward Wilson. Essentially a policy-making organisation, its aim was to co-ordinate all mobilisation activities of the executive branch of the U.S. Gov. Production, procurement, stabilisation, manpower, and transport came under its jurisdiction. The Defence Production Administration and the Economic Stabilisation Agency were the chief agencies given power to carry out O.D.M. policies. After the resignation of Mr Wilson in 1952, John H. Steelman served as acting director until the appointment of Henry H. Fowler in Sept. as director. Under President Eisenhower, in 1953, the O. of D. M. was merged with the Defence Production Administration and Arthur S. Flemming became head of the organisation.

Defence of the Realm Act, the name applied to a series of legislative measures enacted at different periods of the First World War by the British Gov. The Act was familiarly known as DORA, this name being derived from the initial letters of Defence of Realm Act. The first of the series, known as the Defence of the Realm Consolidated Act, 1914, was passed on 27 Nov. 1914. It authorised the trial by courts-martial, or in the case of minor offences by courts of summary jurisdiction, and punishment of persons committing offences against such regulations as might be made during the war for securing the public safety and defence of the realm by the king in council. Particular attention was directed to offences against the regulations designed (a) to prevent persons communicating with the enemy or obtaining information for that purpose or any purpose calculated to jeopardise the success of the operations of any of his majesty's forces or the forces of his allies or to assist the enemy; or (b) to secure the safety of his majesty's forces and ships and the safety of any means of communication and of railways, ports, and harbours; or (c) to prevent the spread of false reports or reports likely to cause disaffections to his majesty or to interfere with the success of his majesty's forces by land or sea or to prejudice his majesty's relations with foreign powers. The Act also made it lawful for the Admiralty or Army Council to take over (a) the whole or any part of the output of any factory or workshop engaged in the manufacture of arms, ammunitions, or warlike stores; (b) such factories, workshops entirely. In May 1915 the Act gave wide powers to the State over the supply and sale of intoxicating liquors in certain areas. Though highly unpopular, the regulations under this type of legislation were revived just before the outbreak of the Second World War, 1939—both Houses of Parliament simultaneously, on 24 Aug., passing the Emergency Powers Act, conferring wide powers on the gov. in time of emergency, including power to conscript men up to 40 years of age, and to take over industrial establs., etc.

Defender of the Faith, see FIDEL DEFENSOR.

Deferent, see PTOLEMAIC SYSTEM.

Deferred Pay was a deduction from the pay of a soldier of the Brit. Army whilst serving, which was paid to him in a lump sum when he finally left the service. It was abolished in 1898.

Deffand, Marie de Vichy-Chamrond, Marquise du (1697–1780), one of the most brilliant Fr. letter-writers of the 18th cent. In 1718 she married the Marquis du D., from whom she soon afterwards separated. Her *salon* in the rue St Dominique was frequented by the most celebrated literary men of the day, and she made herself a conspicuous and notorious figure in Parisian society. In 1753 she became blind. From 1766 she corresponded with Horace Walpole. Most of her correspondence has been pub.

Deficiency Advances, see PUBLIC DEBT.
De Filippi, Cav. Filippi (1869–1938), It. surgeon and explorer, b. at Turin, and educ. at the medical school of Turin Univ. He held posts in surgery at the univs. of Bologna and Genoa. Always a keen Alpine climber, he took part in the duke of Abruzzi's Alaskan expedition, ascending Mt St Elias; and also in the expedition to the W. Himalaya, and Baltoro Glacier in Karakoram. Under the auspices of the It. and Indian Govs. he led a scientific expedition to Karakoram, 1913–14. He pub. works on all these expeditions: *The Ascent of Mount St. Elias*, 1900; *Tuvenzori*, 1909; *Karakoram*, 1912; *Himalaya, Caracorum e Turkestan Cirese*, 1924; works on surgery and chem.; and *Italy's Protection of Art Treasures and Monuments during the War*, 1918; *The Relations of the House of Savoy with the Court of England*, 1920.

Defoe, Daniel (c. 1660–1731), journalist, novelist, and pamphleteer, b. London, son of a butcher, James Foe. About 1703 Daniel changed his name to the more aristocratic De Foe. At a dissenting academy he received a good education, and for a brief space was ambitious to become a dissenting minister, but the idea was renounced, and about 1680 he entered the hosiery business. It is known that he travelled in France and Spain, volunteered in King William's army in 1688, and made other unsuccessful attempts to embark on a business career, but about 1700 he definitely settled down in London to earn a livelihood by journalistic and vigorous pamphleteering. His rough but lively satire of 1701, entitled *The True-born Englishman*, was a spirited apology for the king's Dutch nationality, based on the folly of any people claiming purity of blood, and in particular the Eng., who are, as D. points out, a most composite race. But it was his *Shortest Way with the Dissenters*, 1702, which first made him notorious throughout the country for the House of Commons ordered the book to be burned; and the following description of him was advertised to ensure his speedy apprehension: He is 'a middle-sized, spare man, about 40 years old, of a brown complexion, and dark brown-coloured hair, but wears a wig;

a hooked nose, a sharp chin, grey eyes, and a large mole near his mouth.' This famous treatise was alleged to be written by a 'high-flying' churchman, who advocated a second Bartholomew's Day as the only effective means of getting rid of the obnoxious nonconformists. The fact that the Church party at first accepted the remedy as a serious proposal naturally aggravated their indignation when it became known that the whole pamphlet was a monstrous satire on their violent intolerance. However, the 'unabashed Defoe' found the ordeal of thrice standing in the pillory fairly pleasant, as the entire populace was on his side. His release from Newgate, where he was confined, was due to Harley's intercession with the queen in 1704. The manly dignity of his poem, *A Hymn to the Pillory*, 1703, reveals D.'s character in its most favourable light. In 1704 appeared the first number of his periodical, the *Review*, which was issued 3 times a week, and which



DANIEL DEFOE

After the engraving by M. Vandergucht.

has seldom been surpassed for its combined qualities of diversity of matter, excellence of style, and rapidity of production. Over 5000 printed pages in all were compiled by D. himself for this periodical alone. Passing over his fine denunciation of indiscriminate charity, 1704, and his elaborate *History of the Union of Great Britain*, 1709, we come to his masterpiece, the immortal *Life and Strange Surprising Adventures of Robinson Crusoe*, of York, Mariner, 1719. This work of fiction was based on the 4 years' solitary residence on the is. of Juan Fernandez of Alexander Selkirk, with whom there is a tradition that D. became personally acquainted on his return. It is safe to say that no other writer of 58 has ever produced a work comparable to *Robinson Crusoe* for the apparent artlessness of its unadorned yet intensely dramatic and arresting style, or for the irresistible reality of its atmosphere, which is, after all, one of pure romance. In the same year he pub. a sequel, *The Farther Adventures of Robinson Crusoe*, but perhaps only one in twenty thousand

who has read the first has read the second—for indeed the genius that makes Part I immortal is no longer there. D. wrote a third part in 1720, *Serious Reflections during the Life and Surprising Adventures of Robinson Crusoe*, but it is quite unreadable.

In a short article it is impossible to mention one quarter of what this most prolific of authors wrote. In his *An Appeal to Honour and Justice*, 1715, he attempted to apologise for his discreditable time-serving policy in politics. Under Godolphin he had accepted a regular salary as a staunch Whig, 1706, but he unblushingly turned Tory so as to serve his old patron Harley when he returned to office, 1710. His *Memoirs of a Cavalier and Captain Singleton*, 1720, and *A Journal of the Plague Year*, 1722, are all excellent illustrations of his power to work up circumstantial, but fictitious, detail into the most convincing of narratives. Lord Chatham believed the first to be a true hist., and few would doubt that the plague was described by an actual eye-witness, anxious only to leave behind him an authentic record. Yet D. was a child of 5 when it occurred. Prosperity rewarded D.'s indefatigable activities, and he was able to build himself a very handsome house in Stoke Newington. He was buried in Bunhill Fields. Perhaps his fecundity, his vivid imagination, his literary versatility, and his impressive style have been somewhat obscured by the unheroic, unromantic character of his moral standards (as exemplified in the realistic novels, *Moll Flanders* and *Colonel Jack*, 1722, and *Roxana*, 1724) and beliefs, as also by his offensive though by no means unique, political inconsistencies. The best collected ed. of D.'s works is the *Novels and Selected Writings*, 14 vols. (1927-1928). See G. Chalmers, *Life of Defoe*, 1785; W. Chadwick, *Life and Times of Daniel Defoe*, 1859; W. Lee, *Life and Newly Discovered Writings of Daniel Defoe*, 1869; W. Minto, *Defoe*, 1879; T. Wright, *Life of Daniel Defoe*, 1894; W. P. Trent, *Daniel Defoe: How to Know Him*, 1916; P. Dutton, *Defoe et ses romans*, 1924; and J. Sutherland, *Defoe*, 1937.

Deforcement, in Scots law, denotes the forcible opposition or resistance made to an officer of the law who is at the time employed in executing a legal warrant.

De Forest, John William (1828-1906). Amer. novelist, b. Humphreysville, Conn. In 1851 he pub. a *History of the Indians of Connecticut*, but his most famous book, *Miss Ravenel's Conversion from Secession to Loyalty*, 1867, was a realistic novel of the Civil War, in which De F. served under Sheridan. Others of his novels, all distinguished by vigorous character-drawing, are *Kate Beaumont*, 1872; *The Wethered Affair*, 1873; *Honest John Vane*, 1875; *Playing the Mischief*, 1876; *Irene the Missionary*, 1879; and *A Lover's Recall*, 1898.

De Forest, Lee (1873-). Amer. physicist and wireless technician, b. Council Bluffs, Iowa. Graduated from the Sheffield Scientific School of Yale Univ. in 1899. He has devoted his whole life to wireless,

being a pioneer in the development of wireless telephony in America. He has taken out over 200 U.S.A. patents on radio telephony and telegraphy inventions. One of his most important is the 'Audion' detector, oscillator, amplifier, which made possible transcontinental telephone service by both wire and wireless. He also carried out experiments on phonoflms, later known as talkies. He became vice-president of the Radio Telephone Company in 1913.

Deformity, condition arising from imperfect or perverted development of any structure of the body. D.s may be congenital or acquired. The conditions giving rise to congenital abnormalities are studied under the name of teratology. Acquired D.s are due to accident, disease, the maintenance of abnormal conditions in the course of a trade or occupation, or deliberately contrived compression at the dictate of custom, religion, etc.

Defregger, Franz, Ritter von (1835-1921). Austrian *genre* painter. The picture that first made him famous was 'Speckbacher,' painted in 1868, a picture of the Hofer rising in 1809. After this came 'The Dance,' 'The Prize Horse,' and *genre* pictures of Tyrolean peasant life. In 1876 he painted his famous 'Victors Return,' and in 1898 his masterpiece, 'Hofer going to his Death.' See life by H. Hammer, 1940.

Degas, Hilaire-Germaine Edgard (1834-1917). Fr. painter and engraver, b. Paris and educ. at the École des Beaux-Arts. He was one of the most celebrated Impressionist painters, and showed 24 canvases in the second Impressionist exhibition (1876), but differed from his colleagues in his classic drawing (much influenced by Ingres) and his devotion to Parisian life as subject matter. His subjects include portraits, racehorses, ballet girls, and the circus, and he worked in oils, water-colours, and pastels; he was also a lithographer. His 'Au Café' (L'Absinthe) was fiercely attacked in London (1893), but his masterly ballet scenes were generally admired in his lifetime, and his 'Danseuse à la Barre' (Metropolitan Museum) was sold for 450,000 frs. Failing sight in his later years caused him to take to sculpture. See lives by J. Meier-Graefe, 1923; A. Vollard, 1924; and P. A. Lemoine, *Degas et son œuvre*, 1946-9.

De Gasperi, Alcide, see GASPERI.

De Geer, Louis Gerhard, Baron (1818-1896). Swedish statesman, remembered for his reform of his country's representative system (which had existed unchanged from the later Middle Ages) to a bicameral elective system in 1865-6.

Deggendorf, Ger. tn in the *Land* of Bavaria (q.v.), on the Danube (q.v.), 80 m. NE. of Munich. It has ant. walls, a Gothic tn hall, and sev. old churches. Its riv. harbour is busy, it has a boatyard, and it is a tourist centre. Pop. 17,000.

D'Eglantine, see FABRE D' EGLANTINE.

Deglution, see SWALLOWING.

Dégoutte, Jean Marie Joseph (1866-1938). Fr. gen. who gained distinction in the First World War when commanding the Fr. 6th Army during the Ger.

retreat from the Marne in July and Aug. 1918. He qualified at the École Normale Supérieure but suddenly decided to go to St Cyr, was commissioned to the 4th Zouaves, and went to Tunis. Studied law and languages, becoming proficient in Chinese, Malagasy, and Ger. He served in the Chinese war of 1900, and before the First World War held an important post in Morocco. Commanded the Moroccan div. in the earlier part of the war. Promoted again in 1917, he was given command of the 6th Army in the final phase of the war, reaching the rank of gen. of div. Was commander-in-chief of Fr. troops in occupation of Rhine from 1919 to 1924. Member of Supreme Army Council.

Degree of Latitude, length along a meridian such that the arc between its N. and S. ends is one D. (360th part of the circumference of a circle). A D. of **Longitude** is the arc, measured on the equator, between two meridians that include a spherical angle of one D. at the poles. This arc subtends an angle of one D. at the centre of the earth and is the same length everywhere on the equator, but a degree of lat. varies slightly from equator to poles owing to the earth's polar flattening. See EARTH; LATITUDE AND LONGITUDE.

Degrees in Arts were first granted in the Middle Ages. Even in Rom. times the expression arts or liberal arts was freely applied to certain branches of learning, and about AD 1200 those who devoted themselves to the study of philosophy and science in contradistinction to theology, medicine, and law were said to belong to the Faculty of Arts. Their course of study embraced the 'Trivium,' that is, grammar, dialectic, and rhetoric, and the 'Quadrivium,' which included arithmetic, geometry, astronomy, and music; for such were the divs. of knowledge handed down by the schools of the Rom. Empire. In the 12th and 13th cents. the earliest univs., such as those of Bologna, Paris, Oxford, and Cambridge, began to develop, and it was found necessary to confer some recognised licence on those eligible to teach. Originally, therefore, the degree was a certificate endowing its owner with the privilege of teaching in public at the various centres of learning. The pope was regarded as the final giver of every degree, and no community of pedagogues, however learned, could call themselves a univ. unless they had obtained the papal recognition. Thus in Paris the Master of Arts degree was primarily nothing more than a formal permission from the chancellor of Notre Dame Cathedral for its holder to take his master's chair among his brother profs. and to embark on his pedagogic career. Candidates for D. in A. were obliged even as late as the 18th cent. to take part in dialectical discussions or disputations—a performance known as the keeping of their 'Act.' On 3 occasions the aspirant was obliged to read a Lat. thesis and then to enter into a debate, conducted in a syllogistic form, with a doctor of the faculty and one or more

opponents. At first the subject for discussion was almost invariably taken from Aristotle, but later it was based, for one of the occasions at least, on the *Principia*, or some other treatise of Newton. The last vestige of this system of 'disputation' or 'Act' for the B.A. degree finally disappeared from Cambridge Univ. in 1838, when written examinations became the one recognised test. Gradually the latter had superseded the disputations, as it was found impossible by this means adequately to examine the knowledge of the student in such subjects as mathematics. It soon became the rule in leading univs. that no matriculated student could attain to a degree unless he had conformed to regulations regarding attendance at lectures and residence in the univ. At Paris in the 15th cent. a course of 4 years' study was one of the qualifications necessary for the master in arts, the minimum period for a degree in most univs. to-day being 3 years. In Cambridge an honours degree in arts is called a *tripos*, a name originating from the fact that on the day for conferring new degrees it was the custom for an old bachelor to sit on a *tripos* or stool and to enter into a mock and humorous disputation with his new associates. The Bachelor of Arts degree is of comparatively recent growth, and in Scottish univs. there is an M.A., but no B.A. degree. In England, and in most countries where Eng. education has been influential, the B.A. is recognised as the first degree in arts subjects. It is conferred on the satisfactory completion of a 3 or 4 year course. At Oxford and Cambridge the B.A. is the first degree whether the course leading to it is in arts or science. This is not the case in other Eng. univs. Nevertheless the range of subjects in which a B.A. can be acquired is very great. There are, in the main, 2 types of degree: those in which a student specialises with some intensity and those in which he spreads his study more widely. Formerly the first type was called an *Honours* degree, the latter a *Pass* or *Ordinary* degree. Some univs. now describe them as *Special* and *General* degrees respectively. Some titles now refer to the special field in which the degree is acquired. For example Manchester Univ. awards a B.A. (Admin.), whilst B.A. (Econ.) degrees are awarded at Bristol, Manchester, Durham, and Sheffield Univs. An M.A. degree can be obtained at Oxford and Cambridge after the B.A. without further examination. A specified period of time after matriculation must elapse before a graduate is entitled to a master's degree, for which a fee is then paid. In other Eng. univs. the M.A. is a research degree. It is acquired on the successful presentation of a thesis and candidates may be requested to pass written papers on matters relevant to their work. London Univ. grants M.A. degrees in the following subjects: Anthropology; Archaeology; History of Art; Classics; Education; Geography; History; Mathematics; Medieval and Modern Languages; Oriental Languages; Com-

parative Philology; Philosophy; Psychology; Slavonic and East European Studies; and Sociology. The B.Litt. (Bachelor of Literature) awarded by Oxford is a research degree in arts; it is also awarded by Glasgow and St Andrews. At Cambridge and Durham the degree is called an M.Litt. Doctor's degrees can be obtained in arts subjects, the most usual being the D.Phil. (Oxford) or Ph.D. (Doctor of Philosophy). All the univs. in the U.K. confer this degree on the completion of a course of advanced study and research. The highest award is a doctor of literature (D.Lit., D.Litt., Litt.D.). It is conferred upon graduates distinguished by their contributions to the advancement of learning or science and is based upon a special thesis or upon pub. works.

Degrees in the U.S.A. follow the Eng. pattern as far as stages are concerned. They can however be acquired in a very wide range of subjects indeed. Their first or bachelor's degrees are very much less specialised than those in U.K., and examinations tend to be of the objective test type (although this is not universal). Some univs. confer A.B. (*Artium Baccalaureus*). The M.A. or A.M. is acquired with or without thesis depending on the regulations of individual univs. The Ph.D. and Ed.D. (Doctor of Education) are the highest awards in arts subjects.

Degrees in Commerce, see COMMERCIAL EDUCATION; UNIVERSITIES.

Degrees in Law, see LEGAL EDUCATION.

Degrees in Science were first awarded in England during the 19th cent. First degrees in science awarded after the successful completion of a 3 or 4 year univ. course are called Bachelor of Science, B.Sc., except at Oxford and Cambridge where they are Bachelor of Arts. The B.Sc. at Oxford is a research degree. First degrees are of 2 kinds: *Honours* or *Special* degrees involve a specialised study of 1 subject; *General*, *Pass*, or *Ordinary* degrees cover more subjects less intensely. The titles of many first degrees include the special field of study. For example a B.Sc. (Eng.) is awarded at London, Southampton, Aberdeen and Nottingham Univs.; B.Sc. Tech. at Manchester and Sheffield; B.Sc. (Econ.) at London, Southampton, and Belfast; and B.Sc. (Agric.) at London. A Master of Science M.Sc. degree is not conferred at Oxford but it is the first research degree in science at most other univs. It may be obtained on the basis of written papers or the submission of a thesis or both. There are also master's degrees in technical subjects: for example M.Eng., M. Met., M.Sc. (Eng.), M.Sc. (Min.), M.Sc. Tech., and M.Tech. Perhaps the most usual research degree in science subjects is the Doctor of Philosophy degree, Ph.D. Very distinguished work (by thesis or on the basis of pub. work) is recognised by the award of a Doctorate of Science, Sc.D., D.Sc., D.Sc. (Eng.), D.Eng., and D.Sc. (Econ.) for example. It is perhaps true to say that professional advancement in science depends more upon the acquisition of a

research degree than of an arts degree in U.K. This is due to the nature of scientific work which calls for some training in research techniques. See DEGREES IN ARTS.

De Gubernatis, Angelo (1840-1913), It. author and orientalist, b. Turin. He was appointed prof. of Sanskrit at Florence in 1863, and at Rome in 1891. His works include *Zoological Mythology*, 1872; *Ricordi biografici*, 1873; *Mitologia Vendica*, 1875; *Mythologie des Plantes*, 1878; *Dizionario biografico, degli Scrittori contemporanei*, 1878 ff.; and *Storia universale della Letteratura*, 1882-85. He also wrote some 9 dramas, and pub. a vol. of poetry in 1864.

Dehiscence, in botany, term indicating the opening of the anther of a flower to allow the escape of the pollen; or of fruit indicating the break-up of the fruit or seed case to allow the seeds to escape. Fruits are said to be indehiscent when the ripe seed-vessel falls to the ground without letting the seeds escape. There are 3 kinds of D.: *calcular*, the seed-vessel parting in divs.; *transverse*, the seeds escaping by the falling of a lid; *porous*, seeds escaping through small pores.

Dehiscent Fruit, see FRUIT.

Dehmel, Richard (1863-1920), Ger. poet, b. Wendisch-Hermesdorf. With Detlev von Liliencron he represents the transition from the naturalistic school to more flexible poetic forms. Although D. does not shut himself away from current social issues, his poetry has a strong metaphysical bias, and owes much to Nietzsche both in form and content (e.g. *Aber die Liebe*, 1893; *Weib und Welt*, 1896; *Verwandlungen der Venus*, 1907). He also wrote the essay *Betrachtungen über Kunst, Gott und die Welt*, 1909; and his autobiography *Kriegstagebuch*, 1919. See J. Bab, *Richard Dehmel*, 1926; H. Schöcher, *Richard Dehmel, der Mensch und der Denker*, 1928.

Dehra Dun, a tn of Uttar Pradesh state in India, situated in a valley below the foothills of the Himalayas. It is best known as the home of the Forest Research Institute and the National Defence Academy.

Dehydrogenation (in chemistry). When hydrogen is removed from an organic compound and no other elements replace it, the process is known as D. Many hydroaromatic compounds may be dehydrogenated by heating with sulphur or with selenium. Thus cyclohexanol will give phenol, and cyclohexyl mercaptan, thiophenol, when heated with sulphur. See also OXIDATION.

Deianira, mythical daughter of Althaea and Oeneus, and sister of Melicæ. Hercules and Achelous fought for D.; Hercules being victorious claimed her for his wife. She involuntarily caused her husband's death by sending him the robe presented to her by the centaur Nessus. It was said to preserve love, but in reality was poisoned. When Hercules died in agony D., in despair, killed herself.

Deidamia, daughter of Lycomedes (q.v.), King of the Dolopians in the Is. of Scyros.

When Achilles hid there in maiden's attire, he made her the mother of Pyrrhus or Neoptolemus.

Deification, see APOTHEOSIS.

Deioces, or **Dajaukku**, first king of the Medes, who, according to Herodotus, reigned from 690 to 647 bc, though this lengthy reign may be due to a confusion with the years of his son Phraortes. Dajaukku is mentioned in an Assyrian text of 715 bc.

Deiotarus (d. 30 bc), tetrarch of Galicia, received from the Rom. Senate the title of King of Galicia and Armenia, in return for his services during the Asiatic wars. In the Civil war he joined Pompey. He was accused of plotting against Caesar's life, and Cicero defended him in an oration still extant.

Deiphobe, Cumaean Sibyl, child of Glaucus.

Deiphobus, son of Priam and Hecuba. He married Helen after the death of Paris, and was killed by Menelaus at Troy.

Deira, Anglian kingdom, extending from the Tees to the Humber. With its N. neighbour, Bernicia, it was finally merged in the kingdom of Northumbria (q.v.).

Deirdre, mythical heroine of 1 of the 3 tragic Gaelic poems of Ireland. Destined to be the bride of King Conchobhar, D. falls in love with Naisi (or Noisi), son of Usnagh, and is protected by him and by his brothers. The king slays the 3 young men, and the poem, *Deirdre's Lament over the Sons of Usnagh*, recalls the happy days spent with Naisi in Alba (i.e. Scotland), on Lough Etive, and contrasts them with her present misery in the house of the king. D.'s story is beautifully treated by J. M. Synge (q.v.) in his verse drama, *Deirdre of the Sorrows*. See K. Meyer, *Ancient Irish Poetry*, 1911.

Deism (from Lat. *deus*, god), strictly speaking the belief in a god, synonymous with theism as opposed to atheism. The term is generally used, however, in opposition to revealed religion, and especially to Christianity. Thus Deists are those who believe in a personal God, the Creator of the universe, but regard him as detached from the world to which he has made no revelation. The term is often further restricted to a movement in England which began in the 17th cent. and fl. during the first half of the 18th cent., which was characterised by a strong aversion from Christianity, and a belief in the light of nature and reason as a sufficient guide in doctrine and practice. It called forth many defenders of orthodoxy among the Queen Anne prelates, and had little final effect on Eng. thought. It considerably influenced Voltaire, and had much in common with later Ger. rationalism. Lord Herbert of Cherbury is regarded as 'the father of English D.' Others prominent in the movement were Charles Blount, Matthew Tindal (*Christianity as Old as the Creation*), Wm. Wollaston, Thomas Woolston, John Toland (*Christianity not Mystical*), Anthony Ashley Cooper, 3rd earl of Shaftesbury, Viscount Bolingbroke, and Anthony Collins.

Déjazet, Pauline Virginie (1797-1875), Fr. actress, *b.* Paris. She went on the stage when she was 5 years old, played at the Théâtre des Jeunes-Élèves, in 1821 at the Gymnase, in 1834 at the Théâtre du Palais-Royal, from 1844 to 1849 at the Variétés, and at the Théâtre Déjazet.

Dekker, Eduard Douwes, pseudonym 'Multatuli' (1820-87), Dutch writer, *b.* Amsterdam, who became assistant-resident at Lebak, W. Java. He began to protest against the abuses of the Dutch colonial system, and, being threatened with dismissal, he resigned his post and returned to Holland. His fame as an author was made by his brilliant romance, *Max Havelaar*, 1860, exposing the scandals of the Dutch Gov. in Java. His *Ideën* were pub. 1862-77, and another novel, *De Geschiedenis van Woutertje Pieterse*, 1890. See J. Saks, *Multatuli*, 1937; G. Stuijveling, *Multatuli en de welsprekendheid*, 1952.

Dekker, Thomas (c. 1570-c. 1632), dramatist and pamphleteer, *b.* London. Little is known of his life. He was writing plays for the Admiral's Men in 1598, and appears to have been much in request as a collaborator about this time. Four of his best plays are *Old Fortunatus*, 1600, *The Shoemaker's Holiday*, 1600, a realist comedy, *Satirromastix*, 1602, a satire on Ben Jonson, and *The Honest Whore*, 1604, a tragedy. Less important pieces that can with some confidence be ascribed to him are *The Whore of Babylon*, 1607, *If It Be Not Good the Devil Is In It*, 1612, and *Match Me in London*, 1631. He also collaborated with Middleton and Webster in some plays, and with Ford and Rowley in *The Witch of Edmonton*, 1621, which protests against the persecution of witches. Although Dekker suffered from poverty and was more than once imprisoned for debt, his work attracts by its sunny kindness and simplicity, while the beauty of the lyrics contained in his plays caused Lamb to declare that he 'had poetry enough for anything.' He was also the author of a number of prose pamphlets. *The Wonderful Year*, 1603, describes the plague in London; and the famous *Gull's Hornbook*, 1609, pictures the life of London gallants. Moral satires are *The Seven Deadly Sins of London*, 1606; *News from Hell*, 1606; and *Lantern and Candlelight*, 1609. D.'s *Dramatic Works* were ed. by R. H. Shepherd, 4 vols., 1873; his *Non-Dramatic Works* by A. B. Grosart, 5 vols., 1884-6. See A. C. Swinburne, *The Age of Shakespeare*, 1908; M. L. Hunt, *Thomas Dekker*, 1911.

De Koven, Reginald (1859-1920), Amer. composer, *b.* Middletown, Connecticut. First worked as a musical critic; studied music in Europe. The best known among his compositions are light operas such as *Robin Hood*, 1890 (one of the most successful of Amer. comic operas), *Rob Roy*, 1894, *Maid Marian*, 1901. He also wrote 2 grand operas, *The Canterbury Pilgrims*, 1917, and *Rip Van Winkle*, 1920, and c. 400 songs.

De la Beche, Sir Henry Thomas, see BECHE.

Delaborde, Henri François (1764-1833),

Fr. gen., son of a baker, *b.* Dijon. He joined in the wars of the revolution on the side of Napoleon. In 1793, after the battle at Saverne (Zabern), he was made gen. He was for a time governor of Corsica. In 1812 he served with Napoleon in the Russian war.

Delacroix, Ferdinand Victor Eugène (1798-1863), Fr. historical painter, leader of the Romantic movement, *b.* Charenton, near Paris, his father being foreign minister under the Directory. He was a brilliant colourist and a bold innovator. His earliest success (1822), 'Dante crossing Acheron in Charon's Boat' (Louvre), is an epoch-making picture. His 'Massacres of Scio', 1824, made him a leader. A visit to England (1825) gave him intimate contact with its literature and art, and he produced lithographic illustrations of *Hamlet* and *Macbeth* as well as of Goethe's *Faust*. A visit to Africa (1832) produced his superb 'Women of Algiers' (Louvre). In 1845 he was employed to decorate the library of the Luxembourg, and the ceiling of the Salon de la Paix in the Hôtel de Ville, 1853; but perhaps his greatest work, summing up the romantic spirit, is his vision of the July Revolution of 1830, 'Liberty guiding the People' (Louvre). 'The violence of Delacroix's character seems to show itself in the scenes of frenzy and bloodshed which he loved to paint and around which his imagination continually played. In his many pictures of animals fighting, the masks of tigers and horses assume expressions of malevolence that are disconcertingly human. . . . If we do not look for *joie de vivre* in the work of Delacroix we certainly find the emotional force of his nature translated into terms of colour—colour glowing luridly among the swirling shadows of a general conflagration' (Edward Sackville-West). Baudelaire devoted a wonderful essay to D.'s work in *L'Art Romantique*. See lives by C. Maucclair, 1909; R. Escholler, 1926-8; and H. Graber, 1938; and his *Journal* (abridged in Eng. trans. by W. Pach), 1948.

Delafield, E. M., pen-name of Edmée Elizabeth Monica de la Pasture (1890-1943), daughter of a novelist. In the first World War she was a V.A.D. at Exeter, and wrote of her experiences in *The War Workers*, 1918. In 1919 she married Major A. P. Dashwood, O.B.E., and they settled in Devon, where she was a Justice of the Peace. Her novels include *Consequences*, 1919, and *The Way Things Are*, 1927; *Messalina of the Suburbs*, 1924, and *Women Are Like That*, 1929, are collections of short stories. In 1931 she wrote *The Diary of a Provincial Lady*, which was so successful that she followed it with 3 sequels, the last being *The Provincial Lady in War Time*, 1940.

Delagoa Bay, see LOURENÇO MARQUES.

Delagrangé, Léon (1873-1910), Fr. aviation pioneer who, with G. Voisin, made in 1907 the powered biplane which, although it was not itself successful, led directly to the successful biplanes of the first 'generation' of European aviation, 1908-9.

Delamain, Richard, see SLIDE RULE.

De la Mare, Walter John, O.M. (1873-1956), poet and novelist, b. Charlton in Kent, of Scottish and Huguenot descent. Educ. at St Paul's Cathedral Choir School, where he founded a school magazine, *The Chorister's Journal*. In 1890 he became a clerk in the offices of the Anglo-Amer. Oil Company, and remained there for 18 years. His first book, *Sonnet of Childhood*, was pub. in 1902 under the anagrammatic pseudonym Walter Ramal. In 1908 he was granted a Civil List pension which enabled him to devote all his time to writing. His first novel, *Henry Brocken*, 1904, was followed by *The Three Mulla-Mullaars*, 1910; *The Return*, 1910, which won the Polignac Prize; and *Memoirs of a Midwife*, which won the Tait Black Memorial Prize for 1922. *The Listeners and Other Poems*, 1912, estab. his reputation as a writer of delicately imaginative verse in the twin domains of childhood and dreamland. Later vols. of verse were *Peacock Pie*, 1913; *Molloy*, 1918; *The Veil*, 1921; *Down-again-Derry*, 1922; and *The Fleeting*, 1933. *Rhymes and Verses*, 1944, gathered together the poems written for children, while *Collected Poems*, 1942, contained the rest of his verse. *Collected Stories for Children* appeared in 1944 and *Collected Tales* in 1950, and in 1954 he was awarded the Foyle Poetry Prize for *O Lovely England*. All his work is marked by exquisite craftsmanship, with a faerie atmosphere peculiarly his own. He was made a Companion of Honour in 1948 and awarded the Order of Merit in 1953; he also received honorary degrees from sev. univs. See studies by R. L. Mægroz, 1924; F. Reid, 1929; J. A. Atkins, 1947; H. C. Duffin, 1949; and H. K. Hopkins, 1953.

Delambre, Jean Baptiste Joseph (1749-1822), Fr. mathematician and astronomer. He early attracted the friendship of the Abbé Delille, and obtained a place in the Collège de Plessis. Afterwards he entered the Collège de France, where he taught and studied under Lalande, and on the latter's death in 1807 succeeded to the professorship of astronomy. With Méchain he was appointed by the Fr. Gov. to measure the arc of the meridian between Barcelona and Dunkirk. His chief works were the *Bases du Système Métrique Décimal*, 1806-10, and *Histoire de l'Astronomie*, 1817-27.

Delamere Forest, 4000 ac. of woodland (including Eddisbury Hill and Kelsborrow Castle, both anc. Brit. camps) in NW. Cheshire, England, formerly a chase of the earls of Chester.

Deland, Margaretta Wade, née Campbell (1857-1945), Amer. authoress, b. Allegheny, Pennsylvania. She was educ. at Pelham Priory, a school kept by Eng. women near New York. She taught industrial design in the Girls' Normal College, New York, 1878-9. Her many tales include *John Ward, Preacher*, 1888; *Old Chester Tales*, 1898; *Dr Lavendar's People*, 1903; *The Awakening of Helena Ritchie*, 1906; *The Iron Woman*, 1911; *The Hands of Esau*, 1914; *Around Old Chester*, 1915; *The Vehement Flame*, 1922; *The Kays*, 1926; and *Captain Archer's Daugh-*

ter, 1932. *If this be I*, 1935, is an account of her childhood.

Delane, John Thaddeus (1817-79), journalist, b. London. Educ. at Oxford, he became editor of *The Times* in 1841 at the age of 24, and held the post for 36 years. Under his editorship the paper became the chief organ of public opinion and attained a pre-eminence which it has retained ever since. D. seldom wrote himself, but maintained a rigorous supervision of the work of his staff. See life by A. L. Dament, 1908.

Delano, Jane Arminda (1862-1919), Amer. nurse who distinguished herself in the First World War. B. at Townsend, New York, she first trained as a teacher, then later as a nurse at the Bellevue Hospital School of Nursing in 1884. During the Sp.-Amer. war she became interested in Red Cross work, and from 1911 devoted her life to its organisation. In 1918 she was made director of the dept of nursing, supplying nurses to the army and navy. For her services in France she was awarded the Distinguished Service Medal and the Amer. Red Cross.

Delany, Patrick (c. 1685-1768), Irish divine, a popular preacher, and an intimate of Swift when that great man returned to Ireland after the death of Queen Anne. D.'s affection for Swift led to the pub. of his *Observations upon Lord Orrery's Remarks upon the Life and Writings of Dr. Jonathan Swift*, 1754, in which he rebutted certain damaging statements made by Orrery. In 1743 D. married Mrs Pendarves, who wrote her reminiscences, issued posthumously.

De la Pole, see POLE, DE LA.

De la Ramée, Louise, see LIDA.

Delarey, or De la Rey, Jacobus Herklas (1847-1914), assistant commandant-gen. of the Transvaal forces in the Boer war from 1899 to 1902. In 1899 he opposed Lord Methuen at Belmont, at Enslin, at Modder R., and at Magersfontein. In 1900 he defeated Gen. Clements at Nooitgedacht, but was himself repulsed near Ventersburg in 1901, at Vlakfontein, and at Moodwill, where he made an attack on Maj.-Gen. Kekewich. In 1902 he captured von Donop's convoy near Wolmaranstad, also Lord Methuen's at Tweebosch. On 31 March 1902 he was defeated by Gen. (later Lord) Kitchener. He joined the Boer peace delegates on 9 April at Klerksdorp, and signed the conditions of surrender at Vereeniging 31 May. In Sept. he came over to England with Louis Botha and Christian de Wet. He became a member of the Transvaal Assembly, and later a senator of the Union of S. Africa. He was shot dead near Johannesburg by a police patrol who mistook his car for that of a criminal gang, 16 Sept. 1914.

De la Rive, Auguste Arthur (1801-73), Swiss physicist, b. Geneva; son of Charles Gaspard de la R., prof. of pharmaceutical chem. there. At 22 became prof. of natural philosophy in the Geneva Academy. He investigated the temp. of the earth's crust, and invented electro-gilding. He wrote *Traité d'électricité théorique et appliquée*, 1854-8.

Delaroche, Hippolyte, called **Pau** (1797-1856), Fr. painter. He studied under Gros, and, like Delacroix, revolted early against the classicism of the school of David. He soon gained popularity, and met with far less opposition than Delacroix, but did not possess any of the latter's genius. In 1827 he gained the decoration of the Legion of Honour for his 'Capture of the Trocadero,' and in 1833 was made prof. at the Ecole des Beaux-Arts. After a visit to Italy he received a commission in 1837 for a picture 27 metres long, to decorate the lecture theatre of the Ecole des Beaux-Arts. The picture represents the artists of his time with a background of the sculptors and architects of the Parthenon. It was finished in 1841, and in 1855 was badly damaged by fire. D. set himself to repair the damage, but d. before he could do so. In 1835 he exhibited 'Head of an Angel,' a study of Horace Vernet's daughter, whom he loved with an absorbing passion.

De la Roche, Mazo (1885-), Canadian novelist, b. Toronto. She was educ. at Toronto Univ. In 1927 she was awarded the *Atlantic Monthly's* 10,000 dollar prize for her novel *Jalna*, the first of a series of stories telling of 3 generations of the Whiteoaks, a tempestuous family living in Ontario and ruled by an iron-willed matriarch. Other books of the chronicle are *Whiteoaks of Jalna*, 1929; *The Master of Jalna*, 1933; *Whiteoak Harvest*, 1936; *Whiteoak Heritage*, 1940; *The Building of Jalna*, 1944; *Return to Jalna*, 1949; and *The Whiteoak Brothers*, 1953. She also wrote sev. plays and a hist. of Quebec. In 1938 she was awarded the Lorna Pierce Medal of the Royal Society of Canada.

De la Rue, Warren (1815-89), astronomer, b. Guernsey. He invented the photo-heliograph for studying the sun's surface, and his photograph of the solar eclipse of the sun in 1860 settled conclusively the solar character of the prominences. His work, *Researches on Solar Physics*, was pub. 1869-70, and *On the Phenomena of the Electric Discharge* in 1881.

De la Salle, see LA SALLE. **RENÉ ROBERT CAVELIER**; and **SALLE, JEAN BAPTISTE DE LA, ST.**

De Lattre de Tassigny, Jean, see LATTRE.

Delaunay, Louis Arsène (1826-1903), Fr. actor, son of a wine-seller. He made his appearance at the Comédie Française as Dorante in Corneille's *Le Menteur*. Then began his long and brilliant career in young lovers' parts, in which he acted until 60 years of age. He played with success in the dramas of Victor Hugo and Molière, but it was in de Musset's plays that his talents found their best expression.

Delavigne, Jean François Casimir (1793-1843), Fr. poet and dramatist, b. Le Havre. At the age of 16 he composed an ode on the birth of Napoleon's son. During 1815 he wrote a series of satires against the restoration of the Fr. monarchy, which were known as *Messénienes*, and he wrote most of his prin. plays between the years 1820 and 1830. They are *Les Vêpres Siciliennes* (tragedy), 1818; *Les Comé-*

diens, 1820; *L'Ecole des Vieillards*, 1823, one of his best works; *Marino Faliero*, 1829; *Les Enfants d'Edouard*, 1833. He wrote a hymn called *La Parisienne* for the revolution in 1830, and *La l'arsoviennne* at the time of the Polish rebellion. In 1832 he wrote a tragedy called *Louis XI*, which was founded upon Scott's *Quentin Durward*. His best poetry is characterised by warm feeling and sincerity. A collection of his works was pub. in 1885. He became a member of the Fr. Academy in 1825.

Delaware: 1. S. Atlantic state, one of the original 13 states of the U.S.A. Except for Rhode Is. it is the smallest state, having an area of 2057 sq. m. Its boundaries are Pennsylvania on the N., D. R. (the largest in the state), D. Bay, and the Atlantic Ocean on the E., Maryland on the S. and W. Brandywine R. is famous for the revolutionary battle of 1777. General farming (wheat, corn, oats, rye, barley) is characteristic of the N., while to the S. the soil is better suited to the growing of fruit and truck produce. Peas, tomatoes, strawberries, beans, asparagus, potatoes, melons, and cucumbers are the important truck crops; apples and peaches are the chief fruits. Poultry-raising is a major source of income. The large annual fish catch in D. Bay includes oysters and other shellfish, menhaden, shad, herring, and rockfish. Lewes is the chief fishing centre. Mineral resources are limited to clay, sand, gravel, and small deposits of feldspar, granite, and kaolin. Iron, steel, and leather industries all flourish, the prin. manufacturing centre being Wilmington, which, like New Castle and Lewes, has also an excellent harbour. Other industries are the manuf. of pigments, chemicals, textiles, rayon, aircraft, and machinery; there are also railroad shops and oil refineries. D. has a good railroad (of over 325 m.), and the state is crossed by a canal connecting D. and Chesapeake Bays. D. Memorial Bridge, across the D. R. near New Castle, is an important highway link. Settled first by Swedes and Finns from Christiania in 1638, D. passed into the hands of the Dutch in 1655, and 9 years later was surrendered, together with New Amsterdam (New York), to the Eng. In 1682 Wm Penn obtained proprietary rights in the state, which finally procured a constitution in 1776. Although a slave state up to 1861, D. was not in favour of secession, and sent many men to join the ranks of Lincoln. The state possesses a small univ. (1833), which is situated in Newark. The name of the state is derived from that of the Brit. colonial governor, Thomas West, Lord de la Warr (q.v.). The pop. of D. is 318,085. The prin. cities are Wilmington, 110,355; Newark, 6731; Dover, 6223; New Castle, 5396; Milford, 5180. See E. N. Valandigham, *Delaware and the Eastern Shore*, 1922; and W. A. Powell, *History of Delaware*, 1928.

2. City, co. seat of D. co., Ohio, U.S.A., on the Olentangy R. It is a trading centre for an agric. area, with some

manufs. D. is the seat of Ohio Wesleyan Univ. Rutherford Hayes was b. here. Pop. 11,800.

Delaware River, U.S.A., is formed by 2 branches which rise in the W. Catskills of New York and unite at Hancock, D. co. Hence it flows S.E., forming the New York-Pennsylvania line, to Port Jervis, N.Y., then S. between Pennsylvania and New Jersey to the head of Delaware Bay. It is 315 m. long, and is tidal to Trenton, N.J. The Chesapeake and Delaware Canal now links the riv. with the head of Chesapeake Bay. Delaware Water Gap, where the riv. cuts through Kittatinny Mt. ridge, is a resort area. There are major bridges at Trenton, Philadelphia, and Wilmington.

De la Warr, Thomas West, Baron (1577-1618), colonial governor of America, b. Hampshire. In 1602 he succeeded to the titles and estates as the 3rd (counting from Lord West, the 2nd founder) or 12th (counting from Roger de la W., the 1st founder) baron. In 1609 he was a member of the Virginia Company Council, and was appointed governor and captain-general of Virginia for life. He sailed in 1610 with 3 ships and 150 settlers equipped at his own expense and landed at Jamestown. He was a just and efficient ruler, rebuilt Jamestown, and constructed 2 forts. In 1611 he returned to England. On hearing of the misrule of his deputy, he set sail for Virginia, but d. en route. See DELAWARE.

Delbrück, Hans Georg Ludwig (1848-1929), Ger. historian, b. Bergen, Rügen. He was appointed in 1896 prof. at the univ. of Berlin, in succession to Treitschke, but was far more liberal in his views than the latter. His *History of the Art of War*, 1900, was widely read in Germany. It is said that the strategical conception of the double encirclement adopted by Hindenburg and Ludendorff at the battle of Tannenberg was suggested by D.'s analysis of the battle of Cannae. After the First World War he began a *History of the World*, of which he had completed 4 vols. at his death. Among his other works are lives of Frederick the Great, Napoleon, Moltke, and Ludendorff, and works on military strategy.

Delbrück, Martin Frederik Rudolf von (1817-1903), Prussian statesman, b. Berlin. As minister of commerce he did much to extend the Zollverein. He helped Bismarck considerably before the Franco-Prussian war in holding together the S. Ger. states. Later he disagreed with Bismarck on the tariff question. He resigned in 1876 and sat as a member of the Reichstag.

Delcassé, Théophile (1852-1923), Fr. statesman, b. Pamiers, Ariège. He was a prominent figure in European politics for 25 years. He helped to bring about the Franco-Russian alliance, was one of the architects of the Franco-It. rapprochement, and was largely responsible for the Entente Cordiale. He first read for the Bar, and then joined Gambetta on the staff of the *République Française*, writing articles on foreign policy. D. began his political career as deputy for Foix in 1889,

and was colonial minister in the Dupuy Cabinet, 1894. He was made minister of foreign affairs in 1898 under Brisson, in which year he settled the differences between Great Britain and France over the Fashoda (q.v.) question. He held the same position in the Dupuy (1898), Waldeck-Rousseau (1899), Combes (1902), and Rouvier (1905) Cabinets. From the outset it was his policy to lift France from the state of weakness and isolation in which it had been the aim of Germany to keep her ever since the treaty of Frankfurt, and it has been said of him that his diplomacy saved his country from disaster in 1914. He became minister of marine under Briand, 1909, and continued to hold office under Monis and Poincaré. In Feb. 1913 he was appointed ambas. at St Petersburg, and on his return, in Feb. 1914, he expressed his suspicions of Ger. aggressive designs. He became foreign minister again on the outbreak of the First World War, and negotiated the pact of London, by which the Allies agreed to make peace overtures only by common agreement. In Oct. 1915 he resigned after a dispute with the Fr. Cabinet on the Salonika expedition, and thereafter retired from political life. See G. Reynald, *La Diplomatie française: l'œuvre de Théophile Delcassé*, 1915; and C. W. Porter, *The Career of Théophile Delcassé*, 1930.

Del Credere Commission, higher rate charged by an agent, in respect of which he guarantees the solvency of the purchaser. The contract need not necessarily be in writing, and the principal has no right to make a claim on his agent before he has sought to recover his due from the third party.

Deledda, Grazia (1871-1936), It. novelist, b. Nuoro in Sardinia. She began to write at an early age, and her novels and short stories, which are in a naturalistic vein, are remarkable for the sympathy and humour with which they describe the life of the peasants of Sardinia. She has the classic qualities—simplicity, freshness, and that fine restraint that leads the great mind into intensity of effects. Among her best-known novels are *Elías Portolu*, 1902; *Dopo il divorzio*, 1905 (Eng. trans. *After the Divorce*); and *La Madre*, 1920 (Eng. trans. *The Mother*, 1928). Other works: *L'Ombra del Passato*, 1908; *Canne al vento*, 1913; *La fuga in Egitto*, 1926. She married Palmirino Madessani, a gov. official, in 1897, and leaving Sardinia for the first time she settled down to a happy married life in Rome. Her literary reputation grew, and in 1926 she was awarded the Nobel prize for literature. See L. Falchi, *L'opera di Grazia Deledda*, 1937; E. De Micheli, *Grazia Deledda e il decadentismo*, 1938.

Delegates, Court of, was the prin. court of appeal in eccles. causes, and from the decisions of the Admiralty court. By a statute passed in the second year of the reign of William IV the court was abolished, and its powers transferred to the Privy Council.

Delfico, Melchiorre (1744-1835), It. economist, b. Teramo in the Abruzzi.

His special study was political economy and jurisprudence, and the writings he pub. had great influence in the country, and many abuses were corrected. One of his most important works led to the abolition in Naples of certain restrictions in connection with the sale and exportation of agric. produce. Made a councillor of state in the brief reign of Joseph Bonaparte in Naples. Employed on the new judicial organisation of Naples by Murat. President of the commission of archives under King Ferdinand I. Granted a large pension on retirement. Among his notable works was his *Researches in Roman Jurisprudence*, 1790. In this and other works, which have been reprinted sev. times, he anticipated the scepticism of Niebuhr, and treats the early hist. of Rome as fabulous, denying to the Romans, before the second Punic war, all arts but those of agriculture and making war. See G. de Tipaldo, *Biografia degli Italiani illustri*, 1834; and G. de Filippis Delfico, *Della Vita e delle Opere di Melchiorre Delfico*, 1836.

Delft, anct tn in the prov. of S. Holland, Netherlands, 8 m. N.W. of Rotterdam. It has clean canals bordered with lime-trees; the R. Schie passes through it and out into the Maas at Delfshaven. D., the bp. of the 2 famous painters van Mierevelt and Jan Vermeer (qq.v.), is an almost perfect specimen of a 17th-cent. Dutch tn. Here William the Silent was assassinated in 1584, and the hole in the staircase made by the bullet can still be seen. His residence, the Prinsenhof, now contains an interesting museum devoted to the war between the Dutch and the Spanish (1568-1648). Beneath his monument in the New Church are the vault of the House of Orange and the memorial of Grotius (q.v.), the great jurist. In the Old Church is the monument of Adm. Tromp, a victor in 32 sea-battles, and that of Piet Hein, adm. of the W. India Company, who in 1628 captured the Sp. treasure fleet. The Stadhuis or tn hall in the Groot market contains portraits by van Mierevelt. The Nieuwe Kerk (New Church) has a fine 356-ft tower with a carillon dating back to 1663. The Technical Univ. was founded in 1863. The famous D.-ware (q.v.) business has been revived. There are munufs. of yeast, alcohol, glue and gelatine, dyes, machinery, cigars, telegraph and telephone cables. The tn was occupied by the Germans in 1940. Pop. (1954) 68,587.

Delft-ware, term used in England to mean earthenware covered with a tin-glaze. This opaque white enamel coating is often painted in blue, yellow, and other colours and then fired. This type of ware was first made in the Netherlands c. 1520 in imitation of It. maiolica, but it was not until 1584 that it was made at the tn of Delft. It was introduced into England by Dutch potters about 1571, first at London (Lambeth, etc.), and was later made at Liverpool and Bristol. See F. H. Garner, *English Delftware*, 1948. See EARTHENWARE, European.

Delgo, or **Delje**, tn of upper Egypt, situated on the Nile.

Delhi, cap. city of the Republic of India and the seat of the Central Gov. of India, situated on the r.b. of R. Jumna, 112 m. N.W. of Agra. D. is also a small, self-contained state with its own legislature. There are in fact two cities of D., Old D. and New D. There are also extensive ruins and remains of earlier cities. Little is known in detail of the hist. of the D. vicinity until the Muslim invasions about AD 1200. The ruined cities of D. date from that time, and the present Old D. dates from 1639, when the Emperor Shah Jehan began to build the great fort. It remained the cap. city of the Mogul emperors, and came under Brit. control in 1804. It has for centuries been the scene of much fighting, having been sacked many times. In 1911, on the occasion of the Durbar held by King George V, it was announced that the cap. of the (Brit.) Gov. of India would be moved from Calcutta to D., and New D. was founded at that time. New D., which is some 4 m. S. of Old D., was largely designed and built by Sir Edwin Lutyens and Sir Herbert Baker (qq.v.). The tn is laid out both spaciouly and graciously, with the main gov. buildings and offices, and Parliament House, constructed of the local red sandstone. A number of anct monuments have been skillfully included in the design. The remains of the old cities are innumerable. In Old D. the most notable sights are the fort itself and the Jama Masjid. Chandni Chauk is the most famous of the old streets. In and around New D. are the Purana Kila (Old Fort), Humayun's tomb, the Nizam-ud-din shrine, the tomb of Safdar Jang, the Quth Minar (q.v.), and the old city fort of Tughlaqabad.

In Old D. the traditional crafts of jewellers, ivory workers, and embroiderers are still pursued vigorously. The tn is also a great central market for the products of the surrounding countryside. New D. is an entirely modern city, with a large circular shopping centre, clubs, and modern hotels. Since it became the cap. city of India it has expanded very rapidly, but during World War II was grossly overcrowded and defaced with temporary buildings. Strenuous efforts have been made to restore its former amenities.

Delhi Conference, called in 1940 on the proposal of the viceroy, Lord Linlithgow, to develop the war capacities of the participating countries—Australia, New Zealand, S. Africa, India, Burma, S. Rhodesia, Ceylon, the E. African dependencies, Hong Kong, Brit. Malaya, and Palestine—particularly in regard to the maintenance of the Brit. forces in the Middle E. The aim of the conference was to relieve Great Britain of such of her war burdens as could be borne by the participating countries by the development of their resources to meet both their own needs and the ever-increasing war needs of Great Britain.

Delia, quinquennial feast of Apollo at Delos.

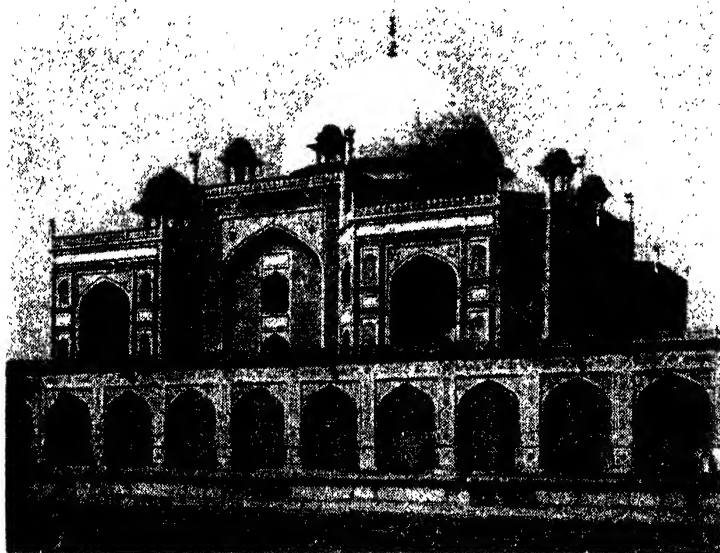
Delian League, see DELOS.

Delibes, Léo (1836-91), Fr. composer, b. St Germain-du-Val (Sarthe). His first

noteworthy composition was the ballet music for *La Source*, which was produced in 1866. This was very successful, and he followed it up with another similar work, *Coppélia*, in 1870, also an opera entitled *Le Roi l'a dit*, 1873. In 1876 he produced a mythological ballet, *Sylvia*, and in 1883 his most successful opera, *Lakmé*. In 1865 he secured a minor post at the Paris Opéra, and in 1881 he was appointed prof. of composition at the Conservatoire.

Delict, term in Scots law meaning a civil wrong. It is equivalent to the Eng. term 'tort.' Essentially it involves an unjustified invasion of the rights of others.

Delirium, temporary derangement of the mental processes usually associated with some form of bodily disease. D. may accompany any feverish condition, and varies in intensity according to the extent and degree of the fever; inflammatory disease affecting the brain is particularly liable to cause D. A toxic condition of the blood induced by the absorption of drugs such as opium, chloroform, and alcohol is apt to cause mental aberration. Exhaustion, whether as the effect of wasting disease, prolonged bodily exertion, or nervous strain, is also a possible cause. The types of mental



The High Commissioner for India

DELHI: THE EMPEROR HUMAYUN'S TOMB.

The act may be either deliberately wrongful or merely negligent and may or may not be a criminal offence.

Delilah, Samson's Philistine mistress who treacherously betrayed him (Judges xvi. 4ff.). See also SAMSON.

Delille, Jacques (1738-1813), Fr. poet, b. Aigueperse, Auvergne. His trans. of Virgil's *Georgics*, 1769, brought him into prominence, and on Voltaire's recommendation he was admitted into the Academy. His didactic poem, *Les Jardins*, 1782, received extravagant praise. During the revolution he settled in London, where he trans. *Paradise Lost*. On his return to France he produced a trans. of the *Aeneid*, 1804. See L. Audiat, *J. Delille*, 1902.

Deliquescence, Deliquescent, see HYGROSCOPIC.

perversion are illusions, hallucinations, and delusions. Illusions are false perceptions where the image formed in consciousness does not correspond with the external object; hallucinations are fictitious perceptions, where images are formed without any external object; delusions are false ideas, where the subject conceives a state of things to be true without any foundation in reality.

Delirium tremens is one of a series of symptoms arising from continued indulgence in alcohol. It rarely happens that a single bout of heavy drinking culminates in this form of alcoholism, although the effects of long continued drinking may show themselves after a particularly heavy bout. Some individuals seem altogether immune, the poisonous effects of alcohol not including actual D. From the

fact that many patients have more than one attack, it appears either that the first attack predisposes to another, or that certain individuals are especially susceptible. Lately it has been shown that vitamin B deficiency, which often accompanies alcoholism, is connected with D. T. Any bodily disorder acts as a predisposing cause of D., and the patient complains of general ill health before the characteristic symptoms set in. He has a feeling of restlessness during the day, and either does not sleep or is troubled with bad dreams during the night. Mental confusion increases until any form of mental derangement may appear. There are muscular tremors and continual perspiration. The patient has hallucinations, seeing unpleasant animals all around him; he may have delusions, being convinced that he is being confined by enemies. He is liable to be violent on occasion. The attack usually lasts about 4 to 6 days, ending in a deep sleep, and leaving the patient in an extremely exhausted state.

Delisle, Guillaume (1675-1726). Fr. scientist of Paris, eldest son of the historian and geographer (*d.* 1720), pupil of his father and of Cassini. He was one of the founders of modern geography. Before him some maps still reflected those of Ptolemaeus (2nd cent. AD). He pub. about 134 maps, many purely geographical, others in connection with eds. of voyages of discovery. In 1700 appeared his map of the world, and celestial and terrestrial globes. In 1702 D. became a member of L'Académie des Sciences, in 1718 geographer to King Louis XV. He wrote *Atlas Géographique* (not pub. until 1789), and contributed to *Mémoires de l'Académie des Sciences*.

Delisle, Joseph Nicholas (1688-1768), Fr. astronomer, *b.* Paris. In 1725 he went to St Petersburg by order of the Empress Catherine, and there founded an observatory. He is famous as the originator of a method for observing the transits of Venus and Mercury by instants of contacts.

Delisle, Léopold Victor (1826-1910), Fr. historian and librarian, *b.* Valognes, Manche. From 1874 to 1905 he was general administrator of the Bibliothèque Nationale in Paris, and in 1837 a catalogue of the Bibliothèque Nationale was begun under his supervision. He wrote *Catalogue des actes de Philippe-Auguste*, 1886, etc.

Delitzsch, Franz (1813-90), celebrated theologian and Hebraist, *b.* Leipzig. His great learning and work diffused theological knowledge and criticism in Germany, England, and America. His commentaries on Genesis, the Psalms, Proverbs, and Ecclesiastes, 1847, were included in the complete commentary on the O.T., ed. by Keil and D. His other works are *System der biblischen Psychologie*, 1855; *Jesus und Hillel*, 1867; and a trans. of the N.T. into Heb., 1877.

Delitzsch, Ger. tn in the dist. of Leipzig, 12 m. N. of Leipzig (q.v.). It is a spa, and has manufs. of sugar, tobacco, and leather goods. Pop. 25,000.

Delium, anct Gk tn, situated on the

Boeotian coast about 25 m. N. of Athens. In 424 BC it was the scene of a battle in which the Athenians were defeated by the Boeotians.

Delius, Frederick (1862-1934), musical composer, of Dutch and Ger. ancestry, *b.* Bradford, Yorks., educ. at Bradford Grammar School and the International College, Isleworth. He at first entered his father's business of wool importing, travelling to Germany, Sweden, and France, but in 1882 he went to Florida to grow oranges. Here he bought a piano and received instruction from the Brooklyn organist, Thomas F. Ward. D. had played the piano as a small child, and when about 7 years of age had been given violin lessons. After a period of music-teaching in America, he returned to



Elliott & Fry
FREDERICK DELIUS

Europe in Aug. 1886, and at the Leipzig Conservatoire studied under Hans Sitt, Reinecke, and Jadassohn. His orchestral suite, *Florida*, was performed in 1888, with Grieg and Sinding in the audience. In 1890 he made Paris his home, where his friends included Ravel, Strindberg, and Gauguin, and he met and married the Dan. painter, Jelka Rosen. In 1897 he provoked a storm in Norway by his satirical rendering of the national anthem in the incidental music he wrote for Heiberg's play *Folkeraadet*. In May 1899 his music was performed at the old St James's Hall, London, meeting with both adverse and enthusiastic criticism. In the same year he settled down on a small property at Grez-sur-Loing, near Fontainebleau, where he lived and composed until his death. A D. festival, organised by Sir Thomas Beecham in London in 1929, aroused much enthusiasm, performances being

given of *A Mass of Life*, *Appalachia*, and extracts from the operas *Fennimore* and *Gerda* and *A Village Romeo and Juliet*. *A Mass of Life* (from Nietzsche's *Zarathustra*), perhaps his most ambitious composition, was composed in 1904-5. The incidental music for Flecker's *Hassan* became well known in London by the long run of the play in 1923. D.'s music is marked by a rare sense of introspection. This is exemplified alike in his earlier and later work, e.g. in his symphonic poem *Paris*, which is far from reflecting the popular fallacy of a garish and gay city, and his *Brigg Fair*, a splendid ruminative set of orchestral variations on a Lincolnshire folksong. Opinion is somewhat divided on the merits of D.'s music. His emotional range was limited, his rhythmic subtlety not marked, and as he relied mainly on his harmonic resources the result is often a certain monotony of mood and texture. His last years were tragically saddened by blindness and paralysis. See Philip Heseltine, *Frederick Delius*, 1923; Clare Delius, *Frederick Delius: Memories of My Brother*, 1935; Eric Fenby, *Delius as I knew him*, 1936; and A. Hutchings, *Delius*, 1948.

Delius, Nikolaus (1818-88), Ger. philologist and Shakespearean scholar, b. Bremen. From 1855 to 1880 he was a prof. at Bonn. His prin. work was his ed. of Shakespeare, 1854-61, with supplement 1865.

Dell, Ethel Mary (1881-1939), novelist, b. Streatham. Educ. at a private school there, she started to write at an early age and had great success with *The Way of an Eagle*, 1912. After that she produced over 30 vols.—novels and collections of short stories. She married Lt.-Col. G. T. Savage, D.S.O., in 1922. Her stories, as well as her verses (a small book of which appeared in 1923), appealed to readers who unite a love of romance with a pious orthodoxy. Among her novels were *The Knife of Diamonds*, 1913; *The Rocks of Valpre*, 1914; *The Keeper of the Door*, 1915; *Greatheart*, 1918; *The Obstacle Race*, 1921; *The Altar of Honour*, 1928; and *Honeysball Farm*, 1937.

Della Casa, Giovanni, see CASA.

Della Cruscani, group of Eng. poets resident in Florence in the latter part of the 18th cent. They took the name from the famous It. Accademia della Crusca (literally Academy of Chaff), which was founded in 1582 with the object of purifying the It. language (sifting away its 'chaff'), and which pub. an important dictionary in 1612. Leaders of the Eng. group were Robert Merry (1755-98) and Hannah Cowley (q.v.). The verse of the D. C. pub. in the *World* and the *Oracle*, and collected in *The British Album*, 1789, had a vogue for a time, but it was silly, fantastic, sentimental, and insipid, and the movement expired under the biting satire that William Gifford (q.v.) poured on it in his *Ravens*, 1791, and *Maeiad*, 1792.

Della Porta, Giambattista (c. 1541-1615), It. physicist, b. and d. Naples. As a youth he travelled in Italy, Spain, and France, and when only about 15 had

already formulated the first 3 vols. of his *Magia Naturalis*. He took part in the foundation of the Accademia dei Oziosi in Naples, then later himself founded the Accademia Secretorum Naturae. Pope Paul V caused the latter to be closed, but in 1610 D. P. was admitted to the Accademia dei Sinceri. Besides his works on natural magic, optics (including the camera obscura), gardening, physiology, and other subjects, he wrote sev. successful comedies in his later days which were collected and pub. in Naples in 1726.

Della Quercia, Jacopo (1374-1438). It. sculptor, b. La Quercia near Siena, son of a goldsmith. He executed a beautiful tomb for the wife of Paolo Guinigi, tyrant of Lucca, and the Fonte Gaia, built in the square at Siena, 1409-19. He partly decorated the portal of San Petronio, Bologna, with sculptural reliefs.

Della Robbia, see ROBBIÀ.

Dellys, small seaport 50 m. E. of Algiers. Pop. (1946) 18,485.

Delmenhorst, Ger. tn in the Land of Lower Saxony (q.v.), 64 m. NW. of Hanover (q.v.). It manufs. linoleum, and has also textile and other industries. Pop. 65,000.

Deloney, Thomas (1543-1600), poet and novelist. He worked as a silk weaver in Norwich and wrote popular ballads, one of which, on the scarcity of corn in 1596, got him into trouble with the authorities. He then took to writing prose fiction, in which he ranks with Greene and Nash, portraying effectively the everyday life of middle-class citizens and craftsmen. His *Jack of Newberie*, 1597, tells of weavers, *The Gentle Craft*, 1598, of shoemakers, and *Thomas of Reading*, 1600, of clothiers. Collections of his verse are *Strange Histories*, 1602, and *The Garland of Good Will*, 1618. His works were ed. by F. O. Mann in 1912.

De Long, George Washington (1844-81), Amer. explorer, native of New York. He took part in a relief expedition to the Arctic, where Charles Francis Hall was exploring Melville Bay (1873). In 1879 he commanded the *Jeannette* on a polar expedition; when in 1881 the ship foundered, after months of hardship he succumbed in N. Siberia. See *Voyage of the 'Jeannette'*, 1882, ed. by his wife.

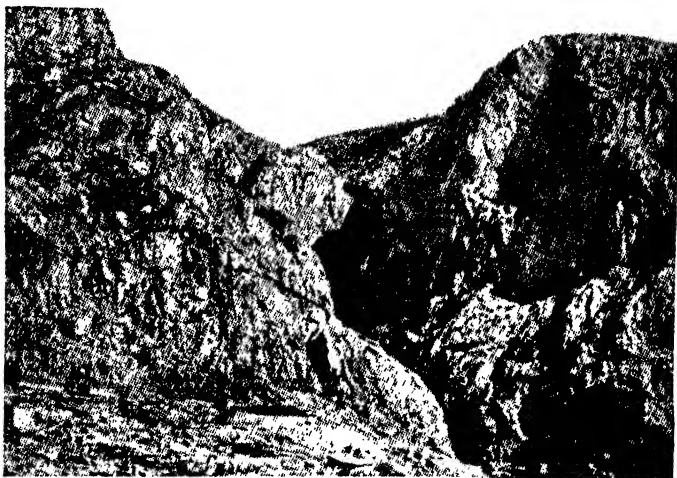
Deloraine, small tn midway between Launceston and Devonport, Tasmania, in good farming country (mainly cattle). There are road and rail connections to Launceston. Pop. 1600.

Delorme, Philibert (1512-70), Fr. architect, b. Lyons, was trained by his father as a builder, studied in Italy 1533-6, returned to France c. 1540. Was given charge of the work at Fontainebleau, 1548; extended the palace of the Tuileries, 1565, with Bullant (q.v.); extended the château of Chenonceaux, 1557; also designed the châteaux of St. Maurice-Fosses, c. 1540, and Anet, 1552-9. He wrote important books on architecture and building construction.

Delos, smallest (about 3 m. long and 1 to 1½ m. broad) and most famous of the Cyclades Is. in the Aegean. Its modern

name is Mikra Dili, lying between Megali Dili (anc. Rheneia) and Myconus. Its name refers to the legend that suddenly it rose above the surface of the waves, and that, whereas at first it floated, Zeus fastened it to the bottom so as to make it a safe refuge for Leto, who was there able to give birth to her twin offspring, Artemis and Apollo. Henceforward the little Is. was sacred to Apollo, within whose precincts were built many temples and treasures, including a shrine in his own honour. D. was famous for the splendour and solemnity of her festivals, to which men came from all corners of the earth, and the periodic festival was also frequented by hundreds of merchants; for on the fall of Corinth in 146 bc D. became a great mart—a centre for the extensive trade between S. Europe and

the S. slopes of Mt Parnassus, and celebrated in anc. times for its oracle. It appears to have been a sacred place at least from the 2nd millennium bc, the sanctuary of a pre-hellenic chthonian deity whose shrine and oracle were taken over by Apollo. This transfer, commemorated each year at the festival of Septima, is represented in the legend of the serpent Pytho's death at Apollo's hands. Hence too the name Pytho, sometimes used of D., and the adjective in 'Pythian Games.' The temple of Apollo (Doric without and Ionic within) was the repository of splendid native offerings and immense treasures, many of which were removed by Nero, and others by Constantine. To the SW. lay the Adytum, where the oracle was delivered; it was supposed to be the centre of the



PHOCIS: THE SITE OF DELPHI

the Asiatic coast. Her excellent roadstead became known to slave traders, who often bartered as many as 10,000 slaves a day at D. Many laws and customs bear witness to the inviolable and holy character of the shrine. The tn of D. built at the base of the great granite crag known as Mt Cynthus, never recovered from its devastation during the Mithridatic war of 87 bc. Half-way up the slope of Cynthus 10 great blocks of granite form a vaulted chamber which was the anc. temple seen by Aeneas when he paid his homage to the city of Apollo (*Aeneid* iii. 84). Between Cynthus and the sea may still be seen the ruins of temples, courts, and colonnades, even a portion of the colossal statue of the god himself and the remains of the shining city. See W. A. Laidlaw, *A History of Delos*, 1933. See also CYCLADES.

Delphi (modern **Kastri**), tn of Phocis, on

earth, and the exact spot was marked by a stone called the *omphalos* (navel), thought to have been recently discovered. At first the oracles, which were always sung by a priestess called Pythia, were delivered only on Apollo's birthday; but later, if the sacrifices were propitious, the Pythia prophesied each day. These oracles were given in ecstatic and often very ambiguous hexameters, until men sarcastically remarked on the imperfection of the prosody of the god, who was, notwithstanding, the patron of poetry. Later, they were enunciated in prose. It is not known how the ecstasy or frenzy was produced. Excavations by Fr. archaeologists since 1880 have made the traditional theory untenable, viz. that it was brought on by vapours arising from the earth. But the effects of unreasoning faith together with strong emotional suggestion are familiar even in our own

day. Up to the time of the Persian wars all Gk states and many foreigners from Italy and Asia, as for instance the famous Croesus of Lydia, came to consult the god on such vital questions as the sending out of colonies, the declaration of war, and the enactment of new laws, but after that time honour and glory fell away from the sanctuary because of the venality, deceit, and strong Spartan sympathies of the priesthood. During the Sacred war (356-346 bc) the Phocians sacked the treasury, and were afterwards condemned for this sacrilege to pay 10,000 talents to the shrine. The Delphic temple was the chief sanctuary of the Amphictyonic league, which controlled international right, and from 586 bc onwards celebrated the famous Pythian games. The theatre of D., which is one of the best preserved, lies to the SW. of the temple. No doubt D. was an information bureau which had its intelligence agents everywhere throughout Greece. That for a thousand years it maintained its illimitable prestige by pure trickery is unlikely. 'It is neither easy,' said Aristotle, of oracular dreams, 'to despise such things, nor yet to believe them.' Except after consultation with D. no Gk colony was ever founded, and even Plato thought the advice of D. a wise preliminary in all national undertakings. There were dignity and pathos in the last of its oracles to the Emperor Julian: 'Go ye and tell the emperor that the carved work of this sanctuary is cast down upon the ground, and the god thereof hath no longer where to lay his head. And, the laurel of his divination is withered, and the waters that spoke with voices are dried up.' See T. Dempsey, *Delphic Oracle*, 1918; F. Poulsen, *Delphi*, 1920; P. Hutton, *Greek Cities*, 1932; and H. W. Parke and D. E. W. Wormell, *The Delphic Oracle* (2 vols.), 1957.

Delphin Classics, set of 64 vols. of Lat. and Gk classics, ed. in France from 1674 to 1730 by 39 scholars under the direction of Montausier, Mme Anne Dacier, Bossuet, and Huet. They were for the use of Louis XIV's son, called the Grand Dauphin. They are now of little use.

Delphinida, see DOLPHIN.

Delphinium, large genus of annuals, biennials, and perennials, family Ranunculaceae, natives of Europe, Asia, and N. America. Commonly grown are the annuals *D. ajacis*, larkspur, *D. consolida*, branching larkspur, and *D. paniculatum*, Macedonian larkspur, and their varieties; and the perennials *D. formosum*, *D. grandiflorum*, *D. nudicaule* and hybrids. *D. candidum*, *D. macrocentron*, and *D. wellbyi* are N. African species, needing greenhouse culture.

Delphinus, or **The Dolphin**, small constellation near Aquila. From time immemorial it has been identified with a dolphin, the Romans calling it Vector Arionis (the bearer of Arion) and the Greeks the Sacred Fish.

Del Rio, city of SW. Texas, U.S.A., co. seat of Val Verde co., a trading centre shipping wool and mohair. Pop. 14,200.

Delta (from the shape of the Gk letter Δ, delta), name applied to alluvial tracts of land enclosed between the bifurcating branches of a riv. and the sea or lake which receives them. The term was first used with reference to the mouth of the Nile. D.s are formed by the solid matter or fine silt which is brought down in suspension by all rivs., and which is the measure of the denudation they accomplish in their course. The formation of D.s seems to depend rather on the absence of opposing currents where the rivs. reach the sea than on the amount of sediment carried down. For where there are strong ebb tides or ocean currents the detritus is deposited out at sea. Thus many D.s occur in inland lakes, in sheltered bays, and especially in the tideless estuaries of the Mediterranean. But it would seem that every riv. tends to form a D., and in support of this theory it may be noted that all large estuaries are being gradually silted up. The La Plati, for example, is full of shallows and sandbanks, and Darwin held that the green pampas was merely the result of sediment accumulated in a former and larger estuary of that riv. As regards the great D. of the Nile (8569 sq. m.), the old belief that Egypt was the gift of that riv. is strictly true with reference to lower Egypt. This D. begins to be formed 90 m. from the sea, and at its greatest breadth is 85 m. across. But one of the greatest D.s in the world is that of the Ganges. The enclosed region of 31,880 sq. m. is itself traversed by innumerable streams that are continually interlacing. Over the D. the riv. reaches the ocean through some 15 mouths, the most easterly branch being the main stream, whilst the most westerly is the sacred Lingli. The deltaic arms of the Niger are 7 in number, the chief channel being the Nun, the most easterly Old Calabar; the tract enclosed, which is as large as Ireland, is covered with jungles, forests, and swamps. D.s are termed lacustrine, fluvial, or oceanic, according as the channels which form them flow into lakes, rivs., or seas.

Delta Metal, alloy invented by G. A. Dick in 1833. It is really a variant of high tensile brass, consisting of copper and zinc, to which a small proportion of ferro-manganese has been added.

Deltoid, triangular, having the shape of the Gk letter Δ (delta). The *deltoid muscle* is attached to the clavicle, acromion, and spine of the scapula, also to the shaft of the humerus; its function is to abduct the arm, i.e. draw it away from the side.

De Luc, Jean André, see LUC.

Deluge, *The*, see FLOOD.

Delusion, a false idea, as when a mental patient fancies he is Napoleon or that there is a conspiracy against his life. See HALLUCINATIONS; ILLUSION; INSANITY.

Delvin, Baron, see NUGENT, SIR R.

Delvinë, or **Delvino**, tn of Albania, 48 m. NW. by W. of Janina. The hills around are covered with orange groves and olive plantations. Pop. 6000.

Delyannis, Theodoros (1826-1905), Gk statesman, b. Kalavryta. He represented

Greece at the Congress of Berlin, 1878. He was prime minister 4 times between 1878 and 1905, when he was assassinated. His political career was based on recovering more Gk provs. from Turkey.

Demand and Supply, see SUPPLY AND DEMAND.

Demantoid, emerald-green garnet, being a gem variety of andradite, cut and worn as a precious stone in Russia. Found in granular masses in serpentine in the Urals, and sometimes known as Uralian emerald, though the true emerald also occurs in those mts. It has the most dery display of rainbow colours in any major precious stone. Sometimes incorrectly called olivine.

Demaratus, king of Sparta from 510 to 491 BC, when he was deposed by Cleomenes. He then went to Persia, where he was welcomed by Darius, and afterwards accompanied Xerxes in his invasion of Greece.

Demavend, Mount, see DAMAVAND, MOUNT.

Dembea, productive, well-cultivated dist. of Ethiopia, situated northward of Lake D. The cap. of the dist. is Gondar.

Dembinski, Henryk (1791-1864), Polish patriot and gen. who, from 1809 to 1813, went as a volunteer to fight in the wars against Russia and Germany; he distinguished himself greatly at the battle of Leipzig. He became gen. in the Polish Army in the rising against Russia, 1830-1, and at the fall of Warsaw he fled to France. In 1849 he joined the Hungarians against the Austrians and Russians, and was made commander-in-chief of the Hungarian Army by Kossuth, but was defeated at Kapolna.

Deme originally meant the dist. inhabited by a tribe which formed an independent community. These small communities gradually became joined together into larger ones, and the word came to signify a country dist., a township, or a par. These D.s were especially important in the gov. of Attica as founded by Cleisthenes in 508 BC.

Dementia, see INSANITY; PSYCHIATRY.

Demerara, riv. and co. of Brit. Guiana. The riv. enters the Atlantic at Georgetown (q.v.); its length is about 200 m. The co. lies mostly between the R.s D. and Berbice, and fronts the sea for about 65 m. It was originally a Dutch settlement. The brown sugar known as D. was first produced here. See BRITISH GUIANA.

Demeter, one of the great divinities of Greece; goddess of earth's fruits, especially of the corn. Her legend was as follows. She was daughter of Cronus and Rhea, and sister of Zeus to whom she bore a daughter Persephone. The latter, while gathering flowers in Asia, was carried off by Pluto (Hades). D., after wandering in search of her daughter, learned her whereabouts from Helios (the Sun). Thereupon she quitted Olympus in anger and dwelt upon earth, conferring blessings wherever she was kindly received and severely punishing those who rejected her, until she was welcomed at Eleusis. But as her indignation continued there was famine upon earth until Zeus agreed that Persephone

should spend two-thirds of the year with her. The meaning of the legend is clear: Persephone, carried off to the underworld, is the seed-corn, which remains concealed in the ground during part of the year; returning to her mother, she represents the rising corn. In Attica D. was worshipped with great solemnity at the Eleusinia (see ELEUSINIAN MYSTERIES) and Thesmophoria. The latter was intended to commemorate the introduction of the principles of civilised life, which were ascribed to D. because agriculture is the basis of civilisation. The Romans, receiving the worship of D. from Sicily, called her Ceres and honoured her with an ann. festival known as Cerealia. See L. R. Farnell, *The Cults of the Greek States*, vol. iii, pp. 29 ff., 1896-1909; T. W. Allen, W. R. Halliday, and E. E. Sikes, *Introduction to the 'Hymn to Demeter' in Homeric Hymns*, 2nd ed., 1936; C. Seltman, *The Twelve Olympians*, 1932.

Demetrius Nicator, or **Demetrius II**, king of Syria (145-141 and 129-126 BC), son of D. Soter (q.v.). He remained in exile for sev. years after his father's death, and then landed in Cilicia and defeated Balas, who had usurped the throne. He married Cleopatra, an Egyptian princess, and lived a life of cruelty and vice. In 138, during a war with the Parthians, he was taken prisoner and detained for 10 years, the throne being filled in the meantime by his brother, Antiochus Sidetes. He regained his position as king in 129, but his subjects rebelled and he was murdered at Tyre (126).

Demetrius Phalereus (c. 345-c. 283 BC), Gk orator and philosopher, b. Phalerum; studied under Theophrastus; was forced to flee into exile by Phocion. After Phocion's death Cassander made him governor of Athens in 317, and he administered the affairs of the city wisely for 10 years. In 307, on the approach of Demetrius Poliorcetes, he fled. Settling at Alexandria, he played some part in the foundation of the library.

Demetrius Poliorcetes ('the Besieger'), king of Macedonia (294-288 BC), b. c. 335, the son of Antigonus I of Asia and Stratonice. During his father's lifetime he was engaged in frequent campaigns against Cassander (q.v.) and his allies. Most notable of these was the siege of Rhodes (305) which won him his surname. After the defeat and death of his father at Ipsus (301) his fortunes declined until, in 294, he was acknowledged by the Macedonian army as their king. In 288, however, he was ousted in favour of Pyrrhus, fled to Cilicia where he ultimately surrendered to Seleucus (285), and died 2 years later in honourable captivity.

Demetrius Soter, or **Demetrius I**, king of Syria (162-150 BC), b. about 185 BC, son of Seleucus IV, Philopator. As a boy he was sent to Rome as a hostage and detained there while his uncle, Antiochus Epiphanes, usurped the throne on the death of Seleucus in 175. He finally escaped, and was acknowledged king by the Syrians, and later by Rome. He was slain by Alexander Balas.

Demi-lion, Demi-man, or Demi-rose, see HERALDRY, *Common charges*.

Deming, co. seat of Lunaco, SW. New Mexico, U.S.A., with a large sanatorium for tuberculosis. Pop. 4000.

Demir-Hissar, see SIDEROKASTRON.

Demise, Anglo-Fr. legal term (from the Fr. *démétire*, to send away) for the transfer of a property, especially by lease. The phrase 'demise of the crown' is used in Eng. law, and means the immediate transfer of kingship and all its attributes to the next heir without any interregnum.

Demiurgos, or Demiurge, Gnostic name for the God whom they thought to be the creator of the material world, as distinct from the true, eternal, and unknowable God, who had no connection with matter. Marcion (q.v.) identified the D. with Jehovah, the God of the Jews.

Demmin, Ger. tn in the dist. of Neubrandenburg, on the Peene, 26 m. NNW. of Neubrandenburg (q.v.). It was one of the first Slav settlements in Pomerania, and was conquered by Henry the Lion (q.v.) in 1164. It later belonged to the Hanseatic League (q.v.). There are sugar, beer, engineering, and distilling industries. Pop. 18,000.

Democracy. The term is of Gk origin meaning literally 'power of the people.' It is used to designate a form of State gov. A democrat is a partisan of gov. by the people. The kernel of a democratic state-form is the constitutional right of the people to govern themselves. D. further means a society based on equality. In a metaphorical sense the word D. is also employed to characterise the tendency of the progressive nations during the last 2 centuries towards a social and political organisation based on popular control. Continental writers, especially the Fr., use the word in a social sense; Gk philosophers used it in a gov. sense; and Eng. and Amer. political writers limit its use to the exercise of political power by the people. D.'s final aim is not confined to the estab. of a republican gov., and can accommodate itself within the limits of a monarchic state. A monarch reigns, but does not govern. In democratic republics all citizens have equal rights, and are as a body, at least theoretically, the formal rulers of the State. Monarchies and republics are both exposed to the danger that a master man may hold the reins of state and rule as a despot, or dictator. The decadence of the aristocratic and moneyed classes leads to *oligarchy*. The degeneration of the masses leads to the worst of all powers, to *ochlocracy*—anglicised, the rule of the rabble. D. as a social principle rests upon the doctrine of the essential equality of all men—a notion derived from the Christian conception of the equality of all men before God, which owes its transference from religion to society and politics mainly to the works of Jean Jacques Rousseau. The rise in Europe after the First World War of the various totalitarian systems, denoting the single-party dictatorial type of gov., as opposed to the liberal conception which assigns to the State only restricted powers, gradually eliminated all pretence of democratic

principles in the gov. of those countries. For soon the sphere of state influence extended over the whole of private life as well as public, and demanded the full submission of the individual to the requirements of the State without even any pretence of freely elected representation. See also INDIVIDUALISM. See T. Paine, *Common Sense*, 1776; A. de Tocqueville, *Democracy in America*, 1842; J. Bryce, *American Commonwealth*, 1888; W. E. Lecky, *Democracy and Liberty*, 1896; J. A. Hobson, *Democracy after the War*, 1917; Sir N. Angell, *The Public Mind*, 1926; J. A. R. Marriott, *Dictatorship and Democracy*, 1935; W. H. Hutt, *Economists and the Public*, 1936; Walter Lippmann, *The Good Society*, 1938; B. E. Lippincott, *Democracy in Transition*, 1938; E. Barker, *Reflections on Government*, 1942; H. J. Laski, *Reflections on the Revolution of our Time*, 1943; A. D. Lindsay, *The Modern Democratic State*, 1943; F. A. von Hayek, *The Road to Serfdom*, 1944; and L. C. Robbins, *The Theory of Economic Policy*, 1952.

Democrats, name of one of the 2 great historic parties in the U.S.A., the Republicans (q.v.) being the other. The D. may be compared in many respects—fiscal policy, social policy, their attitude to the political dangers of centralisation, and so on—to the Liberal party in Great Britain. The policy of the D. has undergone many changes during the last century, but in the main D. have stood for state rights and human rights as against the growing tendency of the central or federal gov. to usurp power. This question of state rights has always been to the fore in the U.S.A., and was one of the first questions to agitate the young republic. George Washington, the first president, with his lieutenant, Alexander Hamilton, secretary of the treasury, was the leader of the party called the Federalists, which stood for a strong national or centralised gov. Opposing him was Thomas Jefferson, the secretary of state, who stood for decentralisation (see CENTRALISATION), and whose party was known indifferently as the Republicans, the Democratic Republicans, and the D. The title of Republicans disappeared towards the end of the first decade of the 19th cent., and that of Democratic Republicans in the campaigns of 1828. The party elected Jefferson as president in 1801, and remained in control of the gov. till 1841. Since then they have been in power from 1845 to 1849, 1853 to 1861, 1885 to 1889, 1893 to 1897, 1913 to 1921, and 1932 to 1952. Democratic presidents since Jefferson have been Madison Monroe, J. Q. Adams, Jackson, Van Buren, Tyler, Polk, Pierce, Buchanan, Cleveland, Thomas Woodrow Wilson, F. D. Roosevelt, and H. S. Truman. In pursuance of their general policy of supporting state rights, the D. in the main lent their aid to the S. states before the Civil war, 1861–5. The party opposing them took the old name of the D., viz. Republicans, in 1856. In later years, after the passions of the Civil war had cooled, the questions at issue between the D. and the Republicans were

mainly the currency and the tariff. President Grover Cleveland crystallised the Democratic attitude by speaking of a tariff for revenue only, that is one to raise only such money as the gov. needed for its expenses, rather than the high protective tariff which the Republicans advocated to aid Amer. manufs. The currency issue became acute in the famous campaign of 1896, when Wm Jennings Bryan was the Democratic nominee for president on the free silver platform. He advocated bi-metalism (q.v.) instead of the gold standard. In 3 separate presidential campaigns, when he was the nominee, this was one of the great issues, and then it dropped out of the party platform. Even on the tariff the D. are not such extreme opponents as they used to be, admitting that a certain amount of protection is necessary for the country, but opposing the high tariffs urged by the Republicans. One of the more recent presidential campaigns was fought by the D. mainly on the prohibition issue, the nominee, 'Al' Smith, being a 'wet.' It resulted in an overwhelming defeat for his party, 4 S. states voting Republican for the first time since the Civil war. After the Civil war the D. were pressed into the background, and they did not recover until 1876. Democratic administrations were elected in 1884 and 1892 (Cleveland), 1912 and 1916 (Woodrow Wilson), 1932, 1936, 1940, 1944 (Roosevelt), and 1948 (Truman). The D.s were defeated in 1952, after 20 years of office, by Eisenhower, but this was a personal victory for a respected army commander as well as for Republican policies. The D. party is correctly regarded as the more liberal party in the U.S.A. But the difference between the 2 great Amer. parties is not simply that of Liberal and Conservative in the Brit. connotation of those terms, for there are Liberal and Conservative Republicans, as well as Liberal and Conservative D. The Democratic party has been strongest in the S. states—the solid S.—and these states are still Democratic. The main issue in the earlier terms of President Franklin Roosevelt was the New Deal. Later this was merged in the war effort; but on foreign policy there is no marked or obvious difference between the D. and the Republicans, though it may be that there is a stronger tendency to traditional Amer. isolationism in the latter. See PARTY GOVERNMENT.

Democritus (c. 460–c. 370 BC), Gk philosopher, and disciple of Leucippus (q.v.), whose theory he developed. His purpose was to reconcile the monism of Parmenides and Zeno with the pluralism of Empedocles and Anaxagoras. The resulting system is known as 'atomism,' which was not, however, a scientific system like modern atomic physics, but a metaphysical hypothesis. All things originate from a vortex of atoms, and differ according to the shape and arrangement of the atoms of which they consist. Fragments of D.'s works have survived. See C. Bailey, *Greek Atomists and Epicurus*, 1928.

Demography, see VITAL STATISTICS.

Demoiselle, or Numidian Crane, grutiform bird, *Anthropoides virgo*, closely allied to the cranes. It breeds in E. Europe and N. Asia; and winters in NE. Africa and S. Asia.

Demoivre, Abraham (1667–1754), Fr. mathematician and demographer, b. at Vitry and educ. at Sedan, Saumur, and Paris. On the revocation of the Edict of Nantes he, being a Protestant, fled to England, and supported himself by giving lessons and by lecturing. He owed much to Newton's *Principia Mathematica*, and afterwards dedicated his *Doctrine of Chances* to that Eng. mathematician. He was chosen as judge in the famous contest between Newton and Leibnitz for the merit of the invention of fluxions. His pub. works include *Annuities upon Lives*, 1725, and *Miscellaneous Analytica de Seriebus et Quadraturis*, 1730. Referred to by Pope: 'Sure as Demoivre without rule or line.'

D.'s Formula is usually stated in the form $(\cos x + i \sin x)^n = \cos nx + i \sin nx$.

D.'s Hypothesis is an hypothesis on the duration of human life, formed by D., as he informs us in the preface of his *Treatise on Annuities*, some years after the pub. of the first ed. of his *Treatise on Chances*, on the inspection of Halley's Breslau Tables. Observing that the decrements of life at the middle ages were very nearly uniform, D. made an extension of this law to the whole of life, not thereby intending to assert that any such principle was correct for childhood and old age, but simply that the effect of the error upon the value of annuities at the middle ages of life would be trivial. The hypothesis is as follows: *Of 86 persons born, one dies every year, till all are extinct*. The remainder of 86 years, at every age, D. called the *complement of life*. The half of the complement of life is the average duration (commonly called the expectation); and the peculiarity of D.'s Hypothesis is that, according to it, every person has an even chance of living the average time of people of his age, which is not true of other tables. The Northampton Tables certainly do nearly coincide with this law at the middle periods of life, but the Carlisle and most other tables differ materially from it.

Demonetisation, term used in connection with currency in 2 senses. The first and more general sense is used for the divesting of money of a standard value (see BIMETALLISM). The second is the withdrawing of coin from circulation. This is done by proclamation stating that after a specified date a certain coin will not be legal tender.

Demonology, branch of religion which deals with spirits or demons. In every religion the presence of these spirits is acknowledged. Two chief classes of demons are recognised, though the distinction is not always clearly drawn. The first class consists of departed human beings who are regarded as still influencing their descendants. These are usually termed ghosts, and are capable of doing good or evil. The second class, usually called demons,

consists of spirits which never inhabited a body, and which are frequently derived from the powers of nature, and are conceived of as associated with the manifestation of that power. The distinction between good and evil spirits depends more upon the sphere of their action than upon their nature. Fire and disease are evil when they attack the individual, but beneficent when invoked against his enemies. As the idea of God evolved, so has the idea of the evil forces opposed to Him. In polytheistic religions, the many gods are balanced by a multitude of demons and spirits, each often having its especial sphere assigned to it. In monotheistic religions 1 God is usually opposed by 1 single evil spirit. Perfect dualism is found in Zoroastrianism, where every good is opposed by its evil, and Ormuzd is opposed by Ahriman. Similarly in Christianity and O.T. Judaism, Jehovah is opposed by Satan, and the hosts of the good angels are opposed by the hosts of the fallen angels. Here, however, we find the evil definitely placed in subordination to the good, a fact which is most clearly exemplified in Job, where Satan appears as a servant of God, whose permission he must ask before tempting Job. The gospels distinctly recognise the belief that disease was sometimes the result of possession by demons, and the early Church carried on Christ's method of expelling them. Exorcists long formed an active minor order, and the name still remains in the Rom. Catholic Church. The common opinion of the early Church was that the gods of all heathen nations were evil spirits who had usurped the place of God, an idea which found its greatest expression in Milton's *Paradise Lost*. In the N. lands they were further discredited by being made ridiculous. The Satan of the miracle plays was a fool whom everyone might outwit, the ancestor of the Elizabethan clown. The most elaborate system of D. is the Muslim, which is largely derived from that of the popular Judaism shown in the apocalyptic books. Belief in more or less malevolent spirits survived throughout the Middle Ages, and late examples of belief in witchcraft among the edue. may be found in Burton and Sir Thomas Browne, and both Addison (*Spectator*, 117) and Johnson (*Rasselas*, ch. xxxi) refer to it. Popular belief has not yet died. The belief in vampires is chiefly found in Slavonic lands, but many references to the succubi who consort with men in their sleep, and incubi, who consort with women, may be found everywhere. See Sir Walter Scott, *Demology and Witchcraft*, 1830; Roskoff, *Geschichte des Teufels*, 1869; E. B. Tylor, *Primitive Culture*, 1871; M. Conway, *Demology and Devil Lore*, 1879; P. Carus, *History of the Devil and the Idea of Evil*, etc., 1900; M. Summers, *The History of Witchcraft and Demology*, 1926, and *The Vampire: his Kith and Kin*, 1928; and G. Hubener, *Beowulf and German Exorcism*, 1935.

De Montherlant, H., see MONTHERLANT.
De Morgan, Augustus (1806-71), eminent mathematician, b. Madura in India.

Edu. at Cambridge, he was prof. of mathematics in London Univ. from 1828 till his death. De M. had strong ideas about the union of logic and mathematics, and in his series of papers entitled *A Budget of Paradoxes*, he discussed mathematical fallacies with much wit and the keenest logic. In support of a decimal coinage he drew up a report which was recommended by a committee of the House of Commons. He wrote treatises on almost every dept. of mathematics, on arithmetic, algebra, trigonometry, and differential and integral calculus, this last pronounced to be the most complete treatise on the subject ever produced in England. See life by S. E. de Morgan, 1882.

De Morgan, William Frend (1839-1917), artist and novelist, b. London, son of the above. Educ. at London Univ., he studied art at the Royal Academy School, where he formed friendships with Morris, Rossetti, Burne-Jones, and others of the Pre-Raphaelite (q.v.) circle. For 40 years he devoted himself to the designing of artistic pottery and stained glass. In 1871 he estab. a pottery industry in Chelsea, and rediscovered the process of making coloured lustres; and in 1888 he erected a factory at Fulham. It was only when he retired from this at the age of 67 that he started producing novels in imitation of his idol, Dickens. *Joseph Vance*, 1906, was a great success, and in the remaining years of his life he wrote 6 more novels—*Alice-for-Short*, 1907, *Somehow Good*, 1908, *It Never Can Happen Again*, 1909, *An Affair of Dishonour*, 1910, *A Likely Story*, 1911, and *When Ghost Meets Ghost*, 1914. Two novels which he left unfinished were completed by his wife, one of them, *Old Man's Youth*, being largely autobiographical. See A. M. W. Stirling, *De Morgan and his Wife*, 1922.

Demosthenes (384-322 BC), Athenian orator, possibly the greatest of all time, b. in the deme of Paconia, in Attica, his father being a wealthy citizen. His father d. early, leaving much wealth to his children, but the guardians abused their trust. D. prosecuted them on coming of age, and his success on this occasion led to his decision to embrace public life. He underwent a most strenuous course of training to overcome an impediment of speech; but the picturesque details of that training, in the course of which he is said to have filled his mouth with pebbles and vied with the thunder of waves on the seashore, rest upon no very cogent evidence. His first appearance in politics was made in the year 354, when in his speech 'On the Navy Boards' (Symmories) he discouraged attack on Persia. To 352 belongs his speech 'For the Megalopolitans,' but his fame was not achieved till the next year, when in his First Philippic he made a strenuous attack on Philip of Macedon, urging his countrymen to cease their mutual jealousies and unite against this common menace. In 349 D. delivered his 3 Olynthiacs, in which he urged the Athenians to defend Olynthus against Philip. In 347, however, Philip gained this last Athenian outpost,

and D. was one of the ambas. sent to negotiate peace with the Macedonian king. The probity of the orator himself was above suspicion; but bribery in other quarters was more successful, and the conqueror was allowed to possess himself of Thermopylae. Peace was concluded in 346, but Philip's intrigues went on continually, and D. gave himself to the work of denouncing them in no measured terms. To this period belong his Second and Third Philippics (344 and 341). On the same work of counteracting Macedonian influence he had gone as ambas. to the Peloponnese in 344. The famous speech 'On the Affairs of the Chersonese,' in the same year as the Third Philippic, forms with the latter oration D.'s crowning effort. When Philip again began a course of active aggression in 340, it was D. who rallied all possible forces against him and supported Gk hopes until the terrible disaster of Chaeronea (338). This ends the era of the

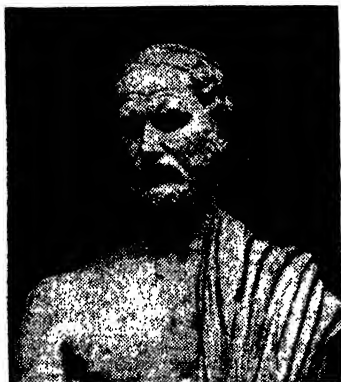
have held him as the greatest of all orators. There is a complete ed. of D.'s orations by S. H. Butcher and W. Rieu (3 vols., 1903-31). See A. W. Pickard-Cambridge, *Demosthenes*, 1914; W. Jaeger, *Demosthenes, The Origin and Growth of his Policy*, 1938.

Demosthenes, son of Alcisthenes, an Athenian gen., prominent in the Peloponnesian war. In 425 he garrisoned Pylos, a rocky promontory on the Lacedaemonian coast, and defended it against the Spartans till relieved by the Athenian fleet, when he obliged the Spartan force on Sphacteria, a neighbouring is., to capitulate. Shortly afterwards he gained Nicaea, but failed to gain Megara. In 413 he and Eurymedon were sent to the relief of Nicias, who was in difficulties at Syracuse. He made a night attack on Epipolae, but was defeated, and counselled Nicias to retreat. The manoeuvre was postponed until too late, and the Athenians were totally defeated in 2 battles and Nicias and D. taken prisoners. Both were put to death.

Demotic Writing. The terms demotic (from Gk *demotikos*, 'of the people') and enchorial (from Gk *enkhōrios*, 'of the country') denote that this Egyptian writing was used for the purposes of daily life. Indeed, while Herodotus (II, 36) employs for it the term *demotika grammata*, 'vulgar characters,' (Clement of Alexandria (*Stromata*, v. 4), of about AD 200, who gave us the names hieroglyphic and hieratic, calls the D. W. *grammata epistolographika*, 'epistolary characters,' that is the script used for writing letters.)

D. was a development of hieratic, which was the cursive form of Egyptian hieroglyphic writing. Externally the D. signs became so cursive that their aspect had nothing in common with that of the original hieroglyphic characters. The difficulty in reading D. is increased by the fact that 2 or more hieratic signs were combined into a single D. character, thus creating a kind of monogram.

However, as a system of writing, D. was no more advanced than hieroglyphic and essentially it consisted of ideograms and phonograms: the former representing concrete objects or abstract ideas without expressing their names, the latter representing spoken words or phonemes. On the other hand, in order to eliminate ambiguities and confusion in interpreting the texts, the number of *homophones* (i.e. signs having the same sounds, but representing different objects and thus being of different form) was so reduced that generally speaking the single phonemes could only be represented by 1 or 2 different characters. Unlike hieroglyphic and hieratic, which could be written in different directions, D. always was written horizontally, from right to left. D. originated in the 8th and 7th cents. BC, and gradually developed till it received its final form in the 4th cent. BC. In the time of the Ptolemys, Alexander the Great's successors in Egypt, which they ruled until the occupation of Rome, D. was considered to be of greater importance than hieratic. Proclamations and documents of general importance were then



DEMOSTHENES

political activity of D. Henceforth he devoted himself chiefly to municipal affairs. So highly was he held in honour that, in 336, Ctesiphon proposed that he should be presented by the state with a gold crown. To prevent this bill passing the Assembly, Aeschines gave notice that he would proceed against Ctesiphon for introducing an unconstitutional measure. He procrastinated until 330, when his speech 'Against Ctesiphon' evoked from D. the immortal oration 'On the Crown.' In 324 the orator was accused of appropriating 20 talents, and was imprisoned. He escaped, and was recalled in the next year to support the Athenian league against Antipater. On the failure of this, Antipater demanded his surrender, and he fled to the temple of Poseidon on the is. of Calauria, and took poison. The private life of D. was of the noblest, and his strenuous and unselfish exertions in the cause of his country entitle him to a high place among the great men of antiquity. All critics since his own day

set forth in hieroglyphic, D., and Gk. In the famous Rosetta Stone, D. occupies the middle portion of the *stèle*.

The latest D. document which can be dated belongs to AD 476. It was the end of the Egyptian scripts, but the Egyptian language did not die out. It continued to be used as *Coptic*, for which a new alphabet was created. Out of its 32 letters 25 were borrowed from the Gk, and 7 signs were taken over from the D. W. for Egyptian sounds which could not be expressed by Gk characters. See W. Spiegelberg, *Demotische Grammatik*, 1925; E. Seidl, *Demotische Urkundenlehre nach den frühptolomäischen Texten*, 1937; S. R. K. Glanville, *Catalogue of Demotic Papyri in the British Museum*, 1939; and D. Diringer, *The Alphabet, a Key to the History of Mankind*, pp. 66-71, 1948.

Demotika, see DIDYMOTICHION.

Dempsey, Sir Miles Christopher (1896-), soldier, b. Hoylake, Cheshire; educ. at Shrewsbury School, from which he went to the R.M.C., Sandhurst, in 1914; commissioned in 1915, and saw service in France and Iraq during the First World War. He received his majority in 1932, and was promoted to the rank of lieutenant-colonel in 1938. He distinguished himself in the early part of the Second World War by the rearguard action which he conducted to defend the evacuation of the Brit. Army from Dunkirk. He later commanded the 13th Corps of the Eighth Army in N. Africa, and was also one of the Brit. commanders in the invasion of Europe in 1944. In the subsequent campaign in France and Germany he led the Second Army with the rank of lieutenant-general, and entered Germany with his troops in Jan. 1945. Awarded D.S.O., 1940; M.C., K.C.B., 1944; and K.B.E., 1945. Commander-in-chief Allied land forces, SE. Asia, 1945-6; commander-in-chief Middle E., 1946-7. Gen., 1946. Retired 1947.

Dempsey, William Harrison (Jack) (1896-), boxer, b. Manassas, Colorado, of Scottish, Irish, and Amer. extraction. Originally a hard-rock miner, D. fought his first professional fight in Colorado in 1914. By defeating Willard in 1919 he became world heavyweight champion, and in 1921 he enhanced his reputation by knocking out Carpenter at Jersey City. In 1922 he toured Europe, and in 1923 a terrific contest with Firpo ended in Firpo's defeat. D. defeated every boxer of note until in 1926 he lost his title to Tunney; a year later he made a gallant effort to regain it, but was defeated on points after 10 rounds.

Demurrage, allowance made to a shipowner by the freighter for the detention of the ship in port beyond the specified time of sailing. A certain number of days, called lay days or lie days, are allowed for receiving and discharging cargo, and it is usually stipulated that the freighter may detain the vessel, after the expiration of these days, on payment of so much *per diem* for overtime. The D. ceases as soon as the vessel is cleared ready for sailing, though she may be prevented from doing so by adverse weather, etc.

Demurrer. In the language of pleadings in an action at law, D. signifies an issue upon a matter of law as opposed to fact, i.e. it confesses the facts as stated by the opposite party to be true, but avers that those facts disclose no cause of action or ground of defence. A D. is now known technically as an objection in point of law. In criminal law D. is an objection by the accused that the facts, even if true, do not in law constitute the crime with which he is charged. Such a D. seldom occurs in practice.

Demy: 1. See PAPER.

2. (i.e. half-fellow) Name given to the holder of a scholarship at Magdalen College, Oxford.

Denain, Fr. tn in the dept of Nord, on the Scheldt canal. An obelisk marks the scene of the decisive victory of Villars over Prince Eugene in July 1712, during the war of the Sp. Succession (see under SPAIN, *History*). D. has coal-mines and ironworks. Pop. 24,900.

Denarius: 1. Rom. silver coin, first minted c. 187 bc, equal at first to 10 asses, whence its name, but afterwards considered equal to 16 asses, when the weight of the as was reduced in consequence of the scarcity of silver. The value of the D. under the republic was rather more than 8d., and at a later period about 7d. The gold D. was worth about 25 silver denarii. The D. of the Empire sank by successive debasements to something little better than copper.

2. Also a weight. The Rom. lb. (libra) contained 96 denarii, the oz. 8, and the D. 3, scruples.

Denbigh, Rudolph Robert Basil Aloysius Augustine Fielding, 9th Earl of (1859-1939), lord-in-waiting to Queen Victoria and to King Edward VII from 1897 to 1906. He is chiefly remembered for his activity in the introduction and development in Britain of the sugar-beet industry. His efforts both by propaganda and in Parliament resulted in the erection of the first sugar-beet factory, at Cantley, Norfolk, in 1912.

Denbigh, or Denbighshire, co. of N. Wales, on the Irish Sea, and between the Dee and the Conway. Area 664 sq. m. It contains the fertile valleys of Llangollen and the Clwyd. The whole surface is rugged and mountainous. The rocks are chiefly Silurian clay and graywacke slates, with some granite and trap, and bands of Devonian, Carboniferous, and Permian strata. Coal, lead (yielding some silver), iron, limestone, grindstone, and flagstone abound. D. yields excellent dairy produce, and is well timbered. Chief tns: Colwyn Bay, Denbigh, Ruthin, Wrexham, Llanrwst, Abergelle, Holt, and Ruabon. Rivs.: Dee, Conway, Elwy, Clwyd. Tumuli and other pre-Rom. remains still exist. Pop. 170,699.

Denbigh, co. tn of Denbighshire, 30 m. W. of Chester, but the assizes are held at Ruthin. Stands on a steep limestone hill, which is crowned by an anct castle on the site of a fortress erected by William the Conqueror. The gatehouse is one of the finest in England, from whence can be had a magnificent view of the vale and

hills. The newer part was built at the bottom of the hill, after the destruction of a great part of the old tn, about 1550. In 1645 Charles I took refuge in the castle after the battle of Rowton Heath. Pop. 8127.

Den Bosch, see *S'HERTOGENBOSCH*.

Dender, riv. of Belgium. Its source is in the prov. of Hainaut, and its course is N. and N.E. through Hainaut and E. Flanders. It joins the Scheldt at Dendermonde, after passing Ath, Grammont, Ninove, and Alost, and is navigable from its junction with the Scheldt to Ath.

Dendera (Gk *Tentyra*, Coptic *Tentore*), vil. in Upper Egypt opposite Kena, once a city, the centre of the worship of the cow-goddess Hat-hor (h.v.) from the Pyramid Age. The temple was built in the 1st cent. bc. by the later Ptolemys and finished by Augustus; much of the decoration is later. It is one of the most complete temples in Egypt, and famous for the Zodiacs on the ceilings, in which the crab is represented as a scarab; one zodiac from a chamber on the roof was removed in 1820 to the Bibliothèque Nationale in Paris.

Dendermonde (Fr. *Termonde*), tn in the prov. of E. Flanders, Belgium, near the junction of the R. Dender and the Scheldt. In 1667 the inhab. repulsed Louis XIV by opening the sluices and inundating the whole dist. He said that only an army of ducks could take it, but Marlborough did take it in 1706. On 4 Sept. 1914 the Germans entered it and damaged or destroyed 1200 out of 1400 houses, after looting them all. The Belgians reoccupied it on 10 Sept., and it was bombarded and retaken by the Germans on 16 Sept. The Gothic 15th-cent. church of Notre Dame was much damaged by the bombardment, and the tn hall of the 14th to 16th cents. was burned. The imposing Palais de Justice adjoins it. Pop. 9600.

Dendrites, or **Dendritic Markings**, geological term. Stains usually black or brown, and branching like fern fronds. They are generally found in the joints and at the div. planes of rocks. They are caused by infiltration of iron and manganese solutions into cracks from whence they have afterwards evaporated. Like markings are also seen in agate or chalcedony, forming a species of moss-agate.

Dendrochronology, the counting and examination of the ann. growth-rings in timber with the object of determining its relative age and the various changes in climate during its growth. It has been largely used in Arizona in the dating of Indian archaeological remains and its use is extending to other areas and periods. See *ARCHAEOLOGY*.

Dendromys (Gk *dendron*, tree, *mys*, mouse), a genus of rodents, belongs to the family Muridae, which comprises mice, rats, voles, and other well-known creatures. It consists of about half-a-dozen species dwelling in Ethiopia. *D. typus* (or *mesomelas*) is about 8 in. long, over half its length belonging to its strong, slender, prehensile tail. In colour it is reddish-brown above, whitish beneath, and its habitat is the branch of a tree,

where it constructs a nest and rears its young.

Dendrophis, genus of tree-snakes of the sub-family Colubrinae, all of which are non-venomous and harmless. The keeled scales along the back are wider than those along the flanks, and the snakes glide up trees in almost a straight line. The genus has representatives in Australia and Africa.

Dene Holes are narrow vertical shafts opening out into double or trefoil or double trefoil caves sunk through the overlying Thanet sand into the chalk rock in certain dists. of Kent and Essex, particularly on the escarpment of the N. Downs and near the Thames estuary. Their use and age has been much disputed. While some may possibly be of pre-Rom. date, others are much more recent, and D. H. have in fact been made within living memory. Many holes were certainly chalk wells or marling pits. Other uses which have been suggested are as hiding places from the Viking raiders, underground silos, and even flint mines of the Neolithic period. Probably more nonsense has been written about D. H. than any other archaeological problem.

Denfle, Friedrich Heinrich Seuse (1814-1905), Austrian priest and historian, b. Imst, Tyrol, son of Johann D., schoolmaster and organist. Studied at Brixen. Joined Dominicans, 1861. Received holy orders, 1866; visited Rome; became prof. of theology in the Dominican monastery at Graz, and famous as preacher. Archivist to the Vatican, 1883; prepared new ed. of St Thomas Aquinas. With P. Ehrle ed. *Archiv für Literatur und Kirchengeschichte des Mittelalters*, 1885-1900. His *Luther und Luthertum in der ersten Entwicklung*, 1904-9 (completed by Weis), aroused much controversy. See lives by M. Grabmann, 1905; and A. Troger, 1908.

D'Enghien, Louis Antoine Henri de Bourbon Condé, Duc, see *ENGHIEN*, Duc d'.

Dengue, or **Breakbone Fever**, or **Dandy Fever**, acute epidemic virus disease, peculiar to tropical and sub-tropical countries. In many ways it resembles rheumatic fever and influenza. The typical case begins with pains in the back, limbs, and joints, a rising temp. following rigors. Before the temp. falls an itching rash appears; the temp. generally falls about the 5th day. There is, however, an intermittent type in which the temp. sinks on the 3rd and 4th days, and rises on the 5th before its final lysis. Extreme weakness follows, and heart failure has to be guarded against by the use of stimulants and nourishment, and also much rest; but it is rarely fatal. D. is transmitted by mosquitoes of the genus *Aedes*, *A. aegypti* and *A. albopictus* being the 2 mainly incriminated.

Den Haag, see *HAGUE*, THE.

Denham, Sir John (1615-69), poet, b. Dublin. He was educ. in Dublin and at Trinity College, Oxford, where he gained the reputation of being 'a slow, dreaming young man, and more addicted to gambling than study.' In 1634 he married and went to live at Egham,

Surrey. At the outbreak of the Civil war he was high sheriff of Surrey, but he had no military ability, and surrendered Farnham Castle, of which he was governor, to the parliament. After a short imprisonment he joined the king at Oxford, and engaged in many secret services for him. In 1665 he temporarily lost his reason, according to common report on account of the duke of York's attentions to his wife. D. was a better poet than soldier or diplomat, and his poem *Cooper's Hill*, 1642, describing the scenery of the Thames Valley at Egham, was the model of Pope's *Windsor Forest*. Among his other works were *The Sophy*, 1642, a tragedy in 5 acts; *The Anatomy of Play*, 1651, a prose tract against gambling; *The Destruction of Troop*, 1656, a paraphrase of part of the second book of the *Aeneid*; *Directions to a Painter*, 1667, a bitter satire on the shameful conduct of the Dutch war; and a beautiful elegy on Abraham Cowley, 1667. His *Poetical Works* were ed. by T. H. Banks in 1928.

Den Helder, see HELDER.

Denia (anc. *Hemeroscopion*; Rom. *Dianium*), Sp. tn in the prov. of Alicante, on the Mediterranean. Founded by the Phoenicians, it was important in Rom. times, and under the Moors its pop. was 50,000. Its prin. industries are toy-making and fruit preserving. Pop. 12,000.

Denier, formerly the unit of silver coinage in France, worth $\frac{1}{20}$ of the *lièvre d'argent*. Cf. the Lat. *denarius* (first issued c. 187 bc, worth 10 asses). From the 16th cent. it was a copper coin of insignificant value, worth $\frac{1}{4}$ of a sou.

Denikin, Anton (1872-1947), Russian gen. of humble origin; entered the army 1887, became a divisional commander in S. Army in the early part of the First World War. At the Russian Revolution he joined Kornilov (q.v.) and was later imprisoned with him. Both escaped and gained the shores of the Black Sea in the Caucasus. Here they joined Gen. Alexeyev's volunteer army. Kornilov d. in Mar. 1918, and D. commanded the force which opposed the Bolsheviks in S. Russia. On Alexeyev's death D. became leader of the anti-Bolshevik forces in S. Russia. D., though a good soldier, was not equal to the occasion as a politician, and he vainly tried to set up a military dictatorship. By the summer of 1919 his forces became demoralised, and when the Bolsheviks attacked them in Nov. 1919 they broke up completely. After the collapse of his army D. fled to Istanbul. He was offered asylum in England, but preferred to go to Brussels. Later he lived in France and finally went to America, where he d. His conduct of the campaign which ended in the 'White' retreat from Orel in 1919 has been criticised on grounds of strategy. That he failed was due in part to his own lack of the indefinable qualities which make a leader of men, in greater part to the extraordinary conditions of the civil war. He pub. sev. vols. on the hist. of the Russian Revolution and Civil War. Two of these, *The Russian Turmoil*, 1922, and *The White Army*, 1924, appeared in Eng.

Deniliquin, municipal tn of New S. Wales, Australia, situated on the Edwards R., in the co. of Townsend, about 490 m. SW. of Sydney. Pop. 4910.

Denim, a coarse twill cotton overall cloth.

Denis. Denys, or Dionysius (1st cent. AD). As a member of the Areopagus he was converted by St Paul (Acts xvii. 34); and early writers say that he became first bishop of Athens, dying in 95. Much later he was confused with St D., first bishop of Paris and patron of France (feast 9 Oct.), and the writings of a 5th-cent. Syrian monk (pseudo-Dionysius) were falsely attributed to him. His feast is likewise on 9 Oct., though Benedict XIV intended to suppress it.

Denis, St, see ST DENIS.

Denison, George Taylor (1839-1925), Canadian soldier and author, b. Toronto, grandson of Lt-Col. George Taylor 1). (1783-1853), who raised the volunteer corps known as Denison's Horse. Called to the Bar, 1861; became a lieutenant-colonel in the active militia, 1866. Served against the Fenian raid of 1866 and the rebellion of 1885. In 1877 he was appointed police magistrate of Toronto. His prin. work, *A History of Cavalry*, 1877, is a standard book and has been trans. into Russian, Ger., and Jap. He also wrote *The Fenian Raid at Fort Erie*, 1866; *Modern Cavalry*, 1868; *Soldiering in Canada*, 1900; *The Struggle for Imperial Unity*, 1909; and *Recollections of a Police Magistrate*, 1920.

Denison, city of Grayson co., Texas, U.S.A., 3 m. S. of Red It., with railway repair shops, mills, oil refineries, and wagon works. Pop. 17,500.

Denizen (through Fr. from Lat. *de intus*, from within), one who obtains through letters patent certain of the privileges of a Brit. subject. When abroad he enjoys the same advantages as a Brit. subject.

Denizli, or Denizli, il of Asiatic Turkey, and tn of same name, about 50 m. S. of Alashehr, and connected with Izmir (Smyrna) by rail. It is the trading centre of an important agric. region, manufacturing textiles; D. exports barley, opium, cotton, and nuts. The ruins of Laodicea are near by. Pop. (II) 368,853; (tn) 22,000.

Denman, Thomas, 1st Baron Denman (1779-1854), lawyer, called to the Bar in 1806, and entered Parliament in 1818. In 1820 Queen Caroline made him her solicitor-general. In that capacity, with Brougham, who was attorney-general, he took an active part in the queen's defence before the House of Lords, and compelled the gov. to withdraw the Bill of Pains and Penalties. D. became attorney-general in 1830, and was lord chief justice from 1832 until 1850, when ill-health compelled him to resign. He was an able though not a brilliant judge. See life by Sir J. Arnold, 1873.

Denman College, Abingdon, Berkshire, England, college of the National Federation of Women's Institutes (q.v.).

Denmark (Dan. *Danmark*), kingdom of N. Europe, and the smallest of the N. states, lying between 54° 34'-57° 45' N.

lat. and $8^{\circ} 5' - 15^{\circ} 12'$ E. long., consisting of a part of the European mainland (the main and N. part of the peninsula of Jutland) and the is. of Zealand (Dan. Sjælland), Fyn, Lolland, Falster, Møen, Langeland, Bornholm in the Baltic Sea, and sev. smaller is. The outlying parts of D. comprise the self-governing Faeroe Is. and Greenland, which by an amendment to the constitution in 1953 ceased to be a colony and became part of D. itself. Iceland (q.v.) became an independent rep. in 1944. Jutland is separated from Norway by the Skagerrack, and from Sweden by the Kattegat. The is. of Fyn and Zealand make 3 channels—the Little Belt, the



Royal Danish Ministry of Foreign Affairs, Copenhagen

FREDERIKSHAVN CUTTERS PUTTING
OUT TO SEA

Great Belt, and the Sound, which is the quickest route to the Baltic. The surface of Jutland presents an almost continuous plain, only a few ft. above sea-level, but the flatness of the landscape is relieved by the gentle slopes of wooded hills. The highest point is Ejler Baynehoej, which reaches a height of about 560 ft. Jutland is thus a part of the great European plain. The W. coast of Jutland is low and sandy, with long spits of sand fringing shallow lagoons. The W. coast is thus without adequate harbours, and its shoals and sandbanks are a peril to mariners. The Lim Fjord, which is quite unlike the fjords of Norway in character, cuts Jutland in two. The prin. fjords and inlets of D. are the Ise Fjord, Roskilde-Fjord, and Ringkøbing-Fjord. As no inland

point in Jutland is more than 50 m. distant from the sea there are no rivs. of importance. The Gudenaa, the longest, is only 85 m. long. There are many small lakes and well-constructed canals, which compensate for the dearth of riv. transport. The climate of D. is rendered temperate owing to the proximity of the sea on all sides, and resembles that of the E. of Scotland. The cold in the is. in winter is less severe than in Jutland. There are no deposits of coal or minerals of much value in D. The W. portions of Jutland consist of barren moorland to some extent, but the E. div. is very fertile and rich in pasturage.

Agriculture and Industry. About 95 per cent of the total land area is productive. Much of the former heath land has been reclaimed since the end of the last century. There are over 200,000 farms, most of them belonging to co-operative societies, which were founded by the farmers themselves. One-fourth of the pop. live exclusively by agriculture, and about one-half by manufs. and trade. The chief plant products are wheat, rye, oats, barley, grass, roots, and potatoes. Cattle, sheep, horses, pigs, and poultry are reared; bacon, butter, cheese, and eggs are produced in great quantities, with a large surplus for export. Beet-sugar and margarine are also manufactured. The fishing industry is increasing in importance. Woollen, cotton, and linen goods are manufactured, but mainly for home supply. Paper-making, iron-smelting, and porcelain manuf. are thriving industries. D. has a unique situation with regard to commerce. It is the key to the Baltic, and is in a good line of communication with all the chief ports of Europe. The Danes have from very ant. times been a great sea-faring people, and in temperament are well suited for commercial life. The chief exports are agricultural, including bacon, butter, cheese, eggs, hides, skins, horses, and cattle; and from Greenland and the Faeroe Is. dried fish, elderdown, feathers, and oil. About half of the exports go to Britain, which buys most of the butter and bacon. Another important trading partner is the Federal German Rep. The chief imports are iron, coal, and other minerals, as well as oils, timber, woollens, silks and cottons, hardware, fruit, tea, coffee, cereals, feeding stuffs and fertilisers, oil seeds, and colonial produce. In 1955 a quarter of all imports came from Britain, the chief items being coal, coke, manufactured fuel, iron and steel, cotton yarn goods, and woollen and worsted yarns and manufs.

Population. The area of D., including the is. in the Baltic, is 16,576 sq. m., and the pop. is 4,448,409. Copenhagen (København), on the is. of Zealand, is the cap.; pop. 753,360.

Helsingør (pop. 23,900), with its strong fortress of Kronborg, commands the Sound. Odense (105,915) is the chief tn on the is. of Fyn. Aalborg (83,210), on the Lim Fjord, is an important mkt tn and canal front. Other tns are Aarhus (118,945), Horsens (36,570), Randers

(41,720), Esbjerg (50,920), Fredericia (27,910), Kolding (33,170), and Vejle (30,760). The Faeroe Is. area 540 sq. m., have a pop. of 31,780. A wide measure of autonomy was granted in 1947 to the people of the Faeroe Is.

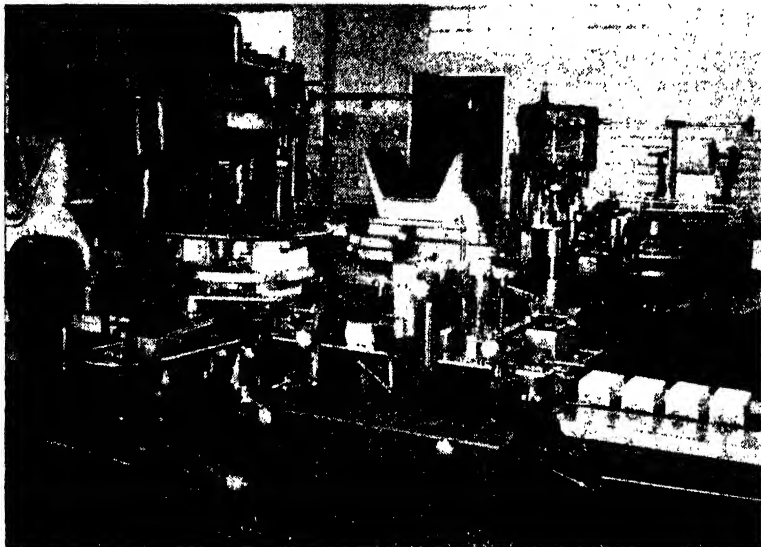
Religion. The estab. church is the Evangelical Lutheran Church, introduced in 1536, at which date the church revenue was taken over by the Crown. Great tolerance is given to all religious sects and no political inconvenience is experienced by the heterodox.

Education. This was made compulsory in 1814, and is free. A notable feature of adult education is the system of Folk High Schools (q.v.), instituted in 1844 at

Faeroe Is. and 2 in Greenland. In the present Folketing the major parties are the Social Democrats, the Liberals, and the Conservatives. The franchise age was lowered from 25 to 23 under the new constitution in 1953.

Finance. The monetary unit is the *krone* of 100 *ore*. Following sterling it was devalued in Sept. 1949, and its present value is 1s. 1d. The National Bank of D., estab. in 1813 and transformed from a private limited company into a state-controlled institution in 1936, has the sole right of issuing notes.

Communications. D. possesses about 3100 m. of railways, over half of which are operated by the State, and the rest



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IN DENMARK

Rødding. The univ. of Copenhagen was founded in 1479, and since 1875 admits both men and women students, now numbering about 5000. The univ. of Aarhus, founded in 1928, has 1800 students; the technical univ. of D. at Copenhagen has 1900 students. There are many training colleges, the Royal Academy of Music and that of Fine Arts, and colleges of engineering, navigation, and domestic science.

Government and Constitution. Since 1660 the throne has been hereditary, and the power of the monarch is limited by the constitution. The 2-chamber system was abolished by the new constitution in 1953, when the *Rigsdag* was limited to 1 chamber, the Folketing, consisting of 179 members, 2 of whom are elected in the

by companies in which the State or municipalities have an economic interest. Compared with other countries the railway network in D. is highly developed, and this holds whether measured by the area of the country or by the number of inhab. Ferry services connect various parts of the country, extending to the Swedish and German coasts. Motorisation has made considerable headway, and in proportion to the number of inhab. D. has, next to France and Great Britain, more motor vehicles than any other European country. D. occupies an excellent position in the centre of the great N. European countries, and has an important transit trade. The Scandinavian Airlines System (SAS) was set up in 1945 by the air services of D.,

Norway, and Sweden. Copenhagen is one of the leading air-traffic centres. The Dan. merchant marine has over 2000 vessels—steamships, steam tankers, motor-ships (about four-fifths), and motor tankers. The postal, telegraph, and national telephone services, as well as broadcasting, are State-operated. In 1954 television was introduced.

Defence. Military defence is based on compulsory national service. The navy consists of coastal destroyers, frigates, motor torpedo-boats, submarines, mine-layers, and mine-sweepers. Coastal defences comprise coast fortifications. The air force mainly consists of jet-propelled aircraft. In 1948 a home guard was estab.

Negotiations with Sweden and Norway for a Scandinavian defensive alliance in 1949 were unsuccessful, and D. became a member of N.A.T.O.

History. The hist. of D. during the first 9 Christian centuries is generally obscure, despite considerable archaeological discoveries made during the past 50 years, and much information must be derived from saga and legend. The Danes claimed origin from Dan, and tradition gives Zealand as being the original home of these peoples, and certainly a religious sanctuary. Pliney makes the earliest reference to this country, and further references are made in Tacitus. The Danes began to achieve European prominence during the 9th cent. With the Norwegians they became known as Vikings and sea-rovers, and it is as Vikings that the Frankish chronicles of the time of Charlemagne make mention of them; whilst during the 9th cent. the stories of their raids and the deaths of their kings are mentioned as events in the hist. of Scotland and of England.

The hist. of D. becomes less obscure about the beginning of the 9th cent. Attempts were made from the great Ger. Sees to convert the Danes, whose kings began to be recognised by the other kings of Europe. From about the year 800 almost to the end of the 15th cent. the name of Dane was feared throughout Europe. To the Litany was added the new phrase 'From the fury of the Dane, Good Lord, deliver us.' From the reign of Charlemagne to the settlement of Rollo in France, Europe was disturbed everywhere by the raids of these pirates of the N. During the 9th cent. many efforts were made to convert the Dane, but it was not until well after the middle of the 10th cent. that we may regard D. as having been in any sense fully converted to Christianity. During the 10th cent. D. tried to extend her ters.; parts of Germany were seized, especially the mouths of the rivs. During the reign of Canute the Great the whole Scandinavian peninsula for a time became one, but the attempt to dominate England, started by Sweyn and continued by Canute the Great, failed after Canute's death.

The hist. of D. during the 11th and 12th cents. is troublous and complicated. Between the death of Canute the Great and the accession of Valdemar the

country was harassed by internal troubles, and by continual disputed successions. With the accession of Valdemar I D. began to become a really strong and consolidated kingdom. The country was the most fertile and the nearest to W. civilisation of the countries of Scandinavia. This gave it advantages which it was not slow to use. D. gradually became the leading nation of the Scandinavian peninsula. In 1241 Valdemar II d., and throughout the 13th and 14th cents. civil war and constitutional struggles continued. The nobles gradually became more powerful than the king. The monarch was shorn of many of his prerogatives. The nobles gained charters, but used their power simply for the increase of their own wealth. On the death of Christopher II (1332) D. was torn by internal struggles, and was on the point of total disintegration; but the royal power was re-estab. by Valdemar IV. Under his daughter Margaret D., Norway, and Sweden were united by the union of Kalmar (1397). This union benefited only D., and was highly unpopular in the other 2 countries. Further, it threatened the power of the Hansatic League, with the result that D. found herself involved in a long war with Holstein—the work of the league. Under Christian I (of Oldenburg) both the Dan. Slesvig and the Ger. Holstein were incorporated in D. (1460), and the king had to promise that the 2 dukedoms should remain united for ever. Once again the authority of the Crown began to deteriorate. The monarch steadily lost his power to the landowners, who became the aristocracy of the 15th cent., and the peasants were reduced to mere serfs.

During the 15th cent. the union of the 3 kingdoms was broken up. Norway remained with D.—she was by far the poorest of the 3 kingdoms and had been practically depopulated by the Black Death. Sweden was still for a time nominally ruled by the Dan. kings, and D. was still the leading power of the 3 kingdoms, but during the early 16th cent. the union received a fatal blow in a massacre by Christian II at Stockholm (1520). From that time the Swedes were the irreconcilable foes of the union. Christian II, however, attempted to establish a strong and well-governed kingdom. This reign coincided with the Reformation in Europe, and finally he was driven into exile, and his uncle, Frederick I, became king. Sweden also at this time was separated for ever by the election of Gustavus Vasa to the throne of that country. The reign of Frederick I was a period of transition, but during the reign of his son, Christian III, the Reformation doctrines were definitely estab. in D. The townspeople and the peasants attempted a rising in 1534-6 against the nobility, but they were denounced by the assembly of lords, who also dealt a final blow at the Rom. Catholic Church in D., the lands of the bishops being handed over to the king and the lords. A new church ordinance was drawn up and approved by Luther, and in 1537 the Dan. Church became entirely

Protestant. The power of D. increased. During the 16th cent. D. was one of the great powers of Europe, and we may well regard the reigns of Frederick II and Christian IV as the period of D.'s greatest strength.

The accession of Christian IV marks a period which may be aptly termed transitional. The power of the king, although nominally very great, was in reality limited by the liberties and privileges of the nobility, and by the increasing liberal tendencies of the burghesses. D. was, above all else, a great Scandinavian power, and she still possessed Norway. This led her into continual disputes with Sweden and also with the maritime nations, the Netherlands and England, who coveted the North Sea fisheries. D. exploited her controlling position at the entrance and exit of the Baltic by levying a duty on the cargo of all ships passing through the Sound. Before the end of the reign D. had begun to lose to Sweden some of her ters., and from that time her possessions continually grew smaller. The next king, Frederick III, although still further shorn of his royal powers, was nevertheless imbued with an idea of winning back the lost ters. In this he was steadfastly supported by his people, and finally, when Charles X seemed to be surrounded by insuperable difficulties in Poland, D. rushed to war. She was defeated and crushed by the Swedes, the last campaigns of this war forming one of the most dramatic episodes of the hist. of war, and D. was forced to sign a disastrous peace at Roskilde in 1658. This was followed by a second war with Sweden, and this time the terms of the treaty were rather easier for D.; much that she had given up was restored, but her Swedish provs. were lost, and the dominion of the N. passed out of her hands for ever. The war had the further result of removing the privileges from the nobles, and finally, after much intrigue and a threatened *coup d'état*, Frederick III succeeded in forcing the council of the realm to recognise him as an hereditary monarch. Thanks to the burghers he was soon able to establish himself as an absolute monarch. From 1660 to 1848 Dan. kings ruled according to 'the king's law' without a parliament or an estates assembly. The change was on the whole beneficial to D. and of vast importance to Norway, which became prosperous and more energetic. During the reign of Christian V, and under the wise diplomacy of the Chancellor Griffenfeldt, D. seemed likely to become again a great European power. The ambitions of France and the alliance of that country with Sweden gave D. her opportunity. The chancellor played his hand with skill, and it was not until Sweden openly attacked Prussia that D. came definitely into the field as the opponent of the Fr. and Swedes. The fall of Griffenfeldt in 1676, however, paved the way for the humiliation of D., and the peace made in 1679 did not benefit D. at all, although on her had fallen the brunt of the battle.

During the early part of the 18th cent. she played an important part in the N.

war, in which Sweden, Hanover, and Prussia were involved, only to find at the end of it that Prussia and Hanover benefited by her territorial conquests, while she had to remain satisfied with financial compensation and the incorporation of the ducal part of Slesvig into the Dan. kingdom. For a time the country remained at peace, and a beginning was made in the attempt to end serfdom in D. During the 18th cent. it was mainly questions of land tenure and agriculture that troubled the Dan. statesmen. Attempts had been made to bring about relief by abolishing such services as militia service, but the price of corn still continued to fall and the peasantry still continued to emigrate. For a while reactionary measures were tried, and these for a short time had the desired effect. Efforts were made to restore the trading prosperity of the nation, and were not without success. Treaty after treaty was signed which gave D. great trading privileges, but still agric. conditions at home showed no change. Under the Bernstorffs matters improved, and before the end of the century D. had declared the importation of corn to be free and had practically emancipated her peasantry. The foreign policy of the century may be summed up in the word neutrality, and by studiously remaining firm to this policy she was enabled to steer clear of all the wars which Europe waged during this period. But it was also a close adherence to this policy, together with the domination of Russia, that resulted in 2 breaches with Britain.

In 1800 the armed neutrality of the N. threatened the power of Britain. Prussia, Sweden, and Russia leagued themselves together, and the latter power practically forced the acquiescence of D. Napoleon closed the continental ports and the Brit. Navy replied by blockade of W. Europe. When D. organised a convoy system to protect her shipping, Britain found it necessary to detach D., and so Parker and Nelson sailed for Copenhagen, where the Dan. fleet was destroyed and the fortifications dismantled. The second breach was caused by Napoleon's desire to close the harbours of the N. to Brit. trade. D. desired to remain neutral, and if this was not possible was resolved to attack even France; but a Brit. fleet was dispatched to take possession of the Dan. fleet, and at the same time to offer D. very generous terms. D. was prepared to be courted, but not to be coerced. As a result Britain took by force what she could not obtain by diplomacy, and D. became an ally of Napoleon and remained staunch to the end of the war. In 1814, by the treaty of Kiel, she lost Norway to Sweden, and in the following year, as duke of Holstein, the Dan. king joined the Ger. confederation, but refused to allow Slesvig to become a member of it, since it formed part of the Dan. kingdom. The position of D. during the period immediately following the Napoleonic wars was one of great poverty and distress. Essentially an agric. country, the falling price of corn impoverished her, and the loss of Norway,

although to a certain extent a relief, was by no means as great a relief as it seemed. One great reform was introduced during this period: the educational reform of 1814, which provided for the compulsory education of every child from the 7th to the 14th year. This reform was the forerunner of many liberal measures which led up to the granting of the democratic constitution in 1849. Absolute monarchy had ended. In Mar. 1848 the Ger. Holstein leaders demanded a free joint constitution for Slesvig and Holstein, while the Dan. National Liberals advocated a free constitution for D. and Slesvig and the separation of Holstein from Slesvig. The ensuing war between D. and Holstein had great international ramifications, and finally the protocol of London was drawn up by the great non-Ger. powers in 1850, guaranteeing the indivisibility of the Dan. monarchy. D. had to promise not to attach herself closer to Slesvig than to Holstein. However, in 1863 D. promised Holstein a new constitution of her own, while Slesvig was to have a *joint constitution with D.* Bismarck struck and D. lost both Holstein and Slesvig. The loss of Slesvig entailed a revised constitution promulgated in 1866. In 1901 the Farmers' party formed their first administration; but of greater ultimate political significance was the rise of the Dan. Social Democratic party during this period, though it did not yet succeed in gaining office. During the First World War D. succeeded in maintaining her neutrality, and by the treaty of Versailles it was decided to settle the Slesvig question by plebiscite. In 1920 N. Slesvig voted for D. by 75,431 votes to 25,329, and was incorporated with D. under the name South Jutland Provs.

In 1924 the first Social Democratic Gov. came into power with the assistance of the Radicals, who had governed the country during the First World War. After a Liberal interval in 1926-9 the Social Democrats ruled until the Second World War. D.'s position at the opening of the war was difficult. She early co-ordinated her policy of neutrality with that of the other Scandinavian states. Pledges were given by both Germany and Britain to respect that neutrality.

History during the German Occupation, 1940-5. Despite the non-aggression pact which Hitler had signed with D. on 31 May 1939, Ger. troops marched across the Dan. frontier on 9 April 1940. Heavy concentrations of Ger. forces on the Slesvig border had warned the Danes of the menace to their country, but they were powerless. After a short but fierce resistance the Social Democratic Premier Stauning gave in under strong protest. King Christian appealed to the country to show a dignified and correct demeanour to the Germans. People felt bound by loyalty to his request. The king's sense of reality and deep sentiment of responsibility offered a guarantee which no political leader in D. was able to counterbalance. A core of resistance hardened under the lead of J. Christmas Møller, Conservative leader and minister of com-

merce, but the Germans soon ousted him through the helpless Dan. Gov. Gradually effective power passed from Stauning to the collaborationist, Scavenius, the foreign minister, from whose policy Stauning consistently held himself strictly aloof. In a memorandum dated 9 April 1940 to the Dan. Gov. on the aims and purposes of their invasion the Ger. Reich gave all manner of specious promises, one of which was that they would respect the integrity and independence of D. The country was, however, economically fleeced; leading politicians were forced out of office and replaced by quislings; writers were arrested; and a censorship estab. The Germans also openly discussed the role which was assigned to D. under the New Order (q.v.), and which gave to D.



Royal Danish Embassy

THE BRIDGE ACROSS THE LITTLE BELT, CONNECTING JUTLAND AND FYN

merely the functions of a vassal state. D.'s 8 torpedo boats, her only naval assets, were taken by the Germans. The Dan. Army was reduced to the size and function of a mere police force. A Ger. attempt to force D. into a customs and currency union with Germany failed, notwithstanding the support of Scavenius, owing to the firmness of the king and the rest of the gov. Dan. agriculture and industry were pressed into the service of the Germans. Fortunately the most valuable part of the Dan. mercantile marine was out of the Dan. reach on 9 April 1940 and joined the Allied cause. Meanwhile a Dan. council had been set up in London as a rallying centre for Danes abroad who wished to fight for the Allies.

From the end of Aug. 1943 the Danes were openly at war with Germany.

Earlier the Scaevinius Gov., with the endorsement of King Christian, had rejected a Ger. ultimatum imposing all manner of restrictions on Dan. life and liberty. The Danes had always been convinced of Germany's ultimate defeat and chafed under the stigma of the great betrayal of 1940, which tricked them into apparent acquiescence in the Ger. occupation. Under the inspiring leadership of the Dan. Freedom Council, which maintained the closest liaison with supreme H.Q. Allied expeditionary force, the resistance movement, which had existed in D. ever since 1940, intensified sabotage against Ger. lines of communication and strategical

general election in 1947 the Social Democrats took over the administration as a minority gov. In 1945 D. entered U.N. In 1949 she signed the North Atlantic Pact and joined the Council of Europe.

Far-reaching constitutional changes have been made in D. in recent years. The constitution of 1953 abolished the 2-chamber legislature and the sole legislative chamber is now the Folketing. A new succession law was linked to the new constitution. This restricted the succession right to descendants of Christian X and his wife, and allowed women to succeed to the throne (sovereigns' daughters ranking after sons). This has enabled



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establs. The clandestine press fl., notwithstanding all the efforts of the Germans to suppress it. Many Danes d. at the hands of the Gestapo.

On 5 May 1945 the Ger. armies in D., NW. Germany, and the Netherlands surrendered to F.M. Montgomery, who during a visit to Copenhagen later in the month declared that the Dan. resistance movement had been 'second to none.'

Post-war Period. On the eve of the liberation a coalition gov. had been formed by representatives of the traditional political parties and the resistance movement under the leadership of Vilhelm Buhl, with J. Christmas Møller as minister for foreign affairs. In Oct. 1945 a new Rigsdag was elected, the Liberals (Farmers) forming the gov. After a new

King Frederick's eldest daughter to become heir-presumptive to her father. D.'s economy made a speedy recovery in the immediate post-war years., but has suffered increasingly from inflationary pressure. In the general election of 1957 the Social Democrats, though weakened, were able to retain office, but Hansen's post-election gov. had now to rely on support from non-Socialists to a considerable extent.

GENERAL: C. Holland, *Denmark, the Land of the Sea*, 1928; E. Jensen, *Danish Agriculture: its Economic Development*, 1937; J. H. S. Birch, *Denmark in History*, 1938; J. C. Moller and Katherine Watson, *Education in Democracy: the Folk High Schools of Denmark*, 1944; P. Palmer, *Denmark*, 1945; Politikens Forlag, *Facts*

about Denmark, 1946; J. Danstrup, *History of Denmark, 1948*; K. Williamson, *The Atlantic Islands: A Study of the Faeroe Life and Scene, 1948*; S. Clissold, *Denmark: The Land of Hans Andersen, 1955*; S. Sitwell, *Denmark, 1956*; Royal Danish Ministry of Foreign Affairs, *Denmark, 1956*; D. Lampe, junior, *The Savage Canary, 1957*.

Danish Language and Literature. Before the year AD 1000 the language spoken in D. was more or less identical with the language spoken in Norway and Sweden. The first Dan. texts known are runic inscriptions from about AD 400 and there are many runic stones from the Viking period and the early Middle Ages. The special Dan. characteristics from this period are the substitution of single long vowels for diphthongs, and the loss of initial *h* before *l*. Not until about 1300 is there a real literature in Dan. The most important sources are some prov. laws, medical books, and later also prayer books, travel books, legends, a collection of proverbs, and a rhymed chronicle (the first Dan. printed book, pub. 1495). In this period initial *h* disappears before *n*, *l*, and *r*, and original diphthongs have become monophthongs; original mutation has often been lost, and 3 distinct dialects have developed—of Scania, of Zealand, and of Jutland. Altogether, before 1500 a considerable simplification has taken place: the original masculine and feminine genders of the nouns have developed into a common gender, and the conjugation of the verbs has been greatly simplified. The most important sound change after 1500 is the change after a vowel of *p*, *t*, *k* into *b*, *d*, *g*.

An important element in modern Dan. is the 'glottal stop,' which developed from an original accent. Until 1948 Dan. followed the Ger. habit of writing all nouns with capital letters, but this has been abandoned by an Act of the Dan. Rigsdag in 1948. At the same time the letter *d* was officially accepted instead of *aa*. The standard dictionary is *Ordbog over det danske Sprog*, a work of 27 vols., pub. 1918-54. For the hist. of the language, see P. Skautrup, *Det danske Sprogs Historie* (in 3 vols.), 1943-9.

Most of the Dan. literature of the Middle Ages is in Lat. Of particular prominence is the 12th-cent. historian Saxo Grammaticus (q.v.), whose work *Gesta Danorum*, in 16 parts, contained the saga of D. from mythical times to 1216. Aet. Dan. heroic legends (e.g. the legend of Amleth) form the most important part of the entire work. Of eminent importance are also the Dan. ballads of which a total of nearly 550 exist in about 3000 varying eds. The most important of them were created between 1200 and 1500. They were the property of the chivalry and sung as an accompaniment to dances, but they were not written down till after the end of the Middle Ages. They are more epic in character than the Fr. and Ger. ballads, and there is a distinct resemblance between Dan. and Scottish ballads. The first printed ballad ed. appeared in 1591 (by A. S. Vedel). The

modern scholarly ed. (by Grundtvig, Olrik, and Grøner Nielsen) is in 5 vols., 1853-1919. Dating from the Middle Ages are also a collection of proverbs (by Peder Laale), law-books, edifying books, and some dramas. The period of the Dan. Reformation (1520-70) is first marked by a great many polemic pamphlets, with Poul Helgesen (b. 1480) as the outstanding defender of the Catholic Faith, and Hans Tavsén, Christiern Pedersen, and Hans Mikkelsen as the prominent representatives of Lutheran doctrines. Peder Palladius, the first Lutheran bishop of Zealand, wrote a *Visitation Book*, characteristic of his frank and lively style, and Christiern Pedersen made a trans. of the Bible, pub. in 1550 as *Christian III's Bible*—from the text of which the written modern Dan. language is derived. Among the hymn-writers of this period special mention should be made of Hans Thomsson and Hans Christensen Sthen. The Reformation was followed by a period of Lutheran orthodoxy with Niels Hemmingsen (1513-1600) as its great theological exponent. The first Dan. hist. to succeed Saxo's work was written by Arild Huitfeldt, whose work *Danmarks Riges Historie* was pub. in 10 vols. in 1595-1603. There were many scientific and scholarly works from the 16th and 17th cents, by Anders Sørensen Vedel (1542-1616), Erik Pontoppidan, Peder Syv (and 1707), Tycho Brahe (1546 1601), Ole Rømer, Thomas Bartholin, Niels Steensen, Ole Borch, and Simon Paulli. A new artificial poetry imitating the classics was written by Anders Arreboe (1587-1637), whose chief work, *Heræmeron*, 1661, describes the Creation in hexameters and alexandrines. Søren Therkelsen imitated Fr. pastoral poetry, and Anders Bording (1619-77) was a versatile poet of the baroque period; he was also the editor of D.'s first newspaper, *Den danske Mercurius*, 1666-77, where the news appeared in rhymed alexandrines. The greatest poet of the 17th cent. was Thomas King (1634-1703), whose hymns are still much in use. In the beginning of the 18th cent. Ludvig Holberg (q.v., later Baron Holberg) (1684-1754) is the greatest name. He was b. in Norway, but settled down in D. where he became a prof. in the univ. of Copenhagen. Holberg is D.'s sole playwright of European importance, and with his comedies he created the modern Dan. drama. He also wrote sev. histories and philosophical essays.

H. A. Brorson (1691-1764) was a writer of pietistic hymns, Ambrosius Stub (1705-1758) an inspired and versatile poet, whose poems range from religious hymns to drinking songs. Johan Herman Wessel (1742-85) was a talented satirist and humorist, whose mock-heroic drama, *Kærlighed uden Strømper*, 1772, ridiculed the bad imitations of Fr. classicism. Towards the end of the 18th cent. there were various Brit. influences upon Dan. literature. The writings of Young, Thomson, and Pope are traceable in sev. Dan. poets, notably in Tullin. The Eng. 'Spectator literature' had great effects on Dan. periodical literature, and

Shakespeare, Milton, Sterne, Ossian, and Fielding had their effects on Johannes Ewald (q.v.) (1743-81). His odes, his tragedies with subjects from Nordic legends and mythology, and his patriotic heroic play *Fiskerne*, 1778, deserve special mention. P. A. Heiberg (1758-1841) was a violent radical inspired by the ideas of the Fr. Revolution. For his antimonarchistic writings he was made an exile and lived the latter half of his life as a refugee in France. Another radical writer was Malthé Conrad Bruun who became later a well-known geographer. Jens Baggesen (1764-1826) distinguished himself as an emotional lyrical poet, a humorist, and a fine prose-writer. His autobiographical sketch *Labyrinthen*, 1792-3, has a high place in the hist. of Dan. prose.

The romantic revival in D. came via Germany and began with the works of Adam Oehlenschläger (q.v.) (1779-1850). His lyrics, his tragedies (often with motives from old Dan. legends), and his re-writing in verse of old Norse mythology, in *Nordens Guder*, had an enormous influence on Dan. literature and thought in the 19th cent. To the romantic school belonged also Schack v. Staffeldt (1769-1826) and B. S. Ingemann (1789-1862), whose historical romances are Dan. equivalents to Scott's Waverley novels. Ingemann was also a pure and exquisite lyrical poet of many 'Morning and Evening Songs.' N. F. S. Grundtvig (q.v.) (1783-1872) also belonged to the romantic school. He was a very prolific writer, D.'s greatest hymnist, her most renowned educationalist, a liberal politician, and a diligent historian and antiquarian; his influence has been very considerable both in and outside D. Carsten Hauch (q.v.) (1790-1872) was a sober and genuine poet, novelist, and dramatic writer. A new realistic interest made itself felt in the writings of Poul Møller (q.v.) (1794-1838) and St Blicher (1782-1848). Poul Møller's greatest contribution to Dan. literature is his novel *En dansk Students Eventyr*, 1824. Blicher was inspired by the Ossian poetry of Macpherson; outstanding among his lyrics is *Trækfuglene*, 1838. His many short stories have a realistic background in Jutlandish life and conditions. Johan Ludvig Heiberg (q.v.) (1791-1860) introduced Hegelian philosophy into D., and was for a time the dominating literary critic of Copenhagen. He re-created the Fr. *vaudevilles* on Dan. soil, but he also wrote some more serious dramas, e.g. the national drama *Elverhøj* and the philosophical drama *En Sjælefler Døden*, 1841. His mother, Fru Gyllembourg, was well known for her stories with everyday subjects, and his wife, Johanne Louise Heiberg, was a famous actress in the Royal Theatre of Copenhagen. To the same aesthetic school belonged also Henrik Hertz (q.v.) (1798-1870), an author of epic and lyric poetry and of bourgeois plays and serious romantic dramas. Prominent among a new school of lyrical poets about the middle of the century were Christian Winther (1796-

1876), Ludvig Pædoher (q.v.) (1793-1874), and Emil Aarestrup (q.v.) (1800-1856). Especially Winther and Aarestrup are known for their fine love lyrics. Frederik Paludan-Müller (q.v.) (1809-76) was originally influenced by Byron, but he gradually became the great moralist in Dan. literature. His main work is the verse novel *Adam Homo*, 1841-8. Hans Christian Andersen (q.v.) (1805-75) even in his own lifetime acquired international fame through his fairy tales. He was also the author of sev. novels, plays, and poems. Another contemporary writer of European fame is Søren Kierkegaard (q.v.) (1813-55), a religious philosopher whose books are on the borderline of philosophy and belles-lettres. Among his philosophical works, *Either-Or*, 1843, is the most important. M. A. Goldschmidt (1819-87) was a gifted novelist of Jewish origin, who described conditions among the Jewish community in Copenhagen. His chief novels are *En Jøde*, 1845, and *Ravnen*, 1867. Less important are the poets Carl Ploug (1813-94), J. C. Hostrup (1812-92), Christian Richardt (1831-92), and H. V. Kaalund (1818-85). H. E. Schack wrote 1 novel of great importance, *Phantasterne*, 1857.

About 1870 a new radical, 'naturalistic' movement began in D., led by the eminent critic Georg Brandes (q.v.) (1842-1927). His chief work, *Main Currents in Contemporary European Literature*, 1871-90, was met with both enthusiasm and antagonism, but his many critical works had an enormous influence on Scandinavian literature. J. P. Jacobsen (q.v.) (1847-85) was the first exponent of naturalist fiction in D. through his 2 novels *Fru Marie Grubbe*, 1876, and *Niels Lyhne*, 1880, and his short stories. Holger Drachmann (q.v.) (1846-1908) was mainly a lyrical poet, generally considered D.'s finest poet in the 19th cent. Henrik Pontopidan (1857-1943) was a sober and distinguished novelist, whose novel *Lykke-Per*, 1898-1904, is one of the landmarks of the Dan. novel. Other novelists from the 1880's are Karl Gjellerup (1857-1919) and Herman Bang (1857-1912). In the nineties a generation of lyrical poets were the dominating names: Johannes Jørgensen (q.v.) (b. 1866), Viggo Stuckenberg (1863-1906), Sophus Clausen (1865-1931), Ludvig Holstein (1864-1943), and Helge Rode (1870-1937). Jakob Knudsen (1858-1917) was a novelist inspired by the ideas of Grundtvig and the Dan. Folk High Schools, and Gustav Wied (1858-1914) was a cynical satirist as a writer of novels and plays.

A new 'pleasant movement' was inaugurated in Dan. literature by the Jutlandish lyrical poets Thøger Larsen (1875-1928), Johan Skjoldborg (1861-1936), and Jeppe Aakjaer (1866-1930), and by the Jutlandish novelist Johannes V. Jensen (q.v.) (1873-1950), whose main work, *The Long Journey*, is based on the Darwinistic theories of evolution. Jensen is also a fine lyrical poet and essayist. Martin Anderson Nexø (q.v.) (b. 1869) has won international fame with his proletarian novels, *Pelle the Conqueror*, 1906-10,

and *Little—Daughter of Man*, 1917–21. His *Memoirs*, 1932–39, rank very high. Other noteworthy novelists are Harald Kilde (1878–1918), Knud Hjort (1869–1932), and Marie Bregendahl (1867–1940).

Of the authors between and after the 2 wars, special mention should be made of the novelists Jacob Paludan (b. 1896), Johannes Buchholtz (1882–1940), Harry Seiberg (1880–1954), Haas Kirk (b. 1898), Knuth Becker (b. 1893), Thit Jensen (b. 1876), Mogens Klitgaard (1906–45), Harald Herdal (b. 1900), Marcus Lauesen (b. 1907), H. C. Branner (b. 1903), and Martin A. Hansen (1909–55). Of the lyrical poets the most important names are Hans Hartvig Scedorff Pedersen (b. 1892), Kai Hoffman (1874–1949), Tom Kristensen (b. 1893), Otto Gelsted (b. 1888), Nis Petersen (1897–1943), Paul la Cour (1902–56), Tove Ditlevsen (b. 1918), and Morton Nielson (1922–44). The prominent playwrights from this period are Kaj Munk (1898–1944), Kjeld Abell (b. 1901), Soya (b. 1896), and Knud Sønderyb (b. 1909).

Art. Dan. art. portrays national culture stretching over 10 millenniums, from the time when birds and animals were carved in amber with a high degree of artistic competence to the pottery of Copenhagen of to-day, with its wonderfully perfect glazes and correct shapes. In the years 2000–1500 BC the Danes had not yet learned from the rest of Europe the secret of bronze, yet they carved copies of bronze axes in stone with a craftsmanship equal to the best ancient ritual jade carvings of the sinic world. When they learned how bronze was made they developed an exquisite art in bronze (1500–800 BC), inventing the signal-horn or lur, stated to be one of the oldest musical instruments in the world; some of these lurs can still be played. The early bronze period of D. coincided with the Cretan, and the later period with the heyday of classical Greece: this independent flowering of a culture is sufficient refutation of the theory that lands beyond the influence of Mediterranean culture were barbarous until the 11th cent. AD, when the Christian church reached D. Dan. art. continued to find its expression in architecture and decoration (see SCANDINAVIAN ARCHITECTURE).

The first Dan. painters representing neo-classicism in the 18th cent. were N. A. Abildgaard (1742–1848) and Jens Juel (1745–1802). C. V. Eckersberg (1783–1853) was a pupil of David in Paris. Among his contemporaries in the 'Golden Age' were Christen Købke (1810–48), P. C. Skovgaard (1817–75), J. T. Lundbye (1818–48), and Dankvart Dreyer (1816–52). To the same period belonged also the fine illustrator Wilhelm Marstrand (1810–73). The greatest Dan. painters towards the end of the 18th cent. were P. S. Krøyer (1851–1909), L. A. Ring (1854–1933), Theodor Philipsen (1840–1920), Vilhelm Hammershøi (1864–1916); among the 20th cent. Dan. painters special mention should be made of Poul S. Christiansen (1855–1933), Fritz Syberg (1862–1939), J. F. Willumsen

(b. 1863), Harald Giersing (1881–1927), the 2 brothers Joakim Skovgaard (1856–1933) and Niels Skovgaard (1858–1939), Niels Larsen Stevns (1861–1941), Edvard Weie (1879–1943), Olaf Rude (b. 1886), Oluf Høst (b. 1884), Johannes Larsen (b. 1867), Jens Søndergaard (b. 1895), Vilhelm Lundstrøm (b. 1893), and Knud Agger (b. 1895). Particularly noteworthy among modern Dan. sculptors are Kai Nielsen (1882–1924), Gerhard Henning (b. 1880), Adam Fischer (b. 1888), Astrid Noack (b. 1889), Mogens Bøggild (b. 1901), and Knud Nellemose (b. 1908).

Fine craftsmanship in furniture, interior decoration, ornaments, porcelain, and jewellery remains a notable feature of Dan. art: the silversmith, Georg Jensen (1866–1935) achieved fame as an artist, and created the silverware which bears his name.

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Dennis, C. J., see AUSTRALIAN LITERATURE.

Dennis, John (1657–1734), critic and playwright, b. London, son of a saddler. He was educ. at Harrow and at Cambridge. He lived the improvident life of a literary adventurer, and was a political writer, a poet, a dramatist, and a critic. It is as the last that he is principally known, not from his own works, but from Pope's *Essays on Criticism* and *The Dunciad*. D., unfortunately for himself, was throughout his life a butt for nimble wits and spirits more sociable and pleasant than his own, and early he was condemned by Pope and Swift as 'a Whig dog' and left unread. Nor was he any match for the malice and cleverness of Pope, who did not appreciate D.'s criticisms of his work. But at least if a surly and sour critic D. was a passionate lover of spiritual and intellectual beauty. This is evident in his best-known work, *Essay on the Genius and Writings of Shakespeare*, 1712, and also in his *Reflections Critical and Satirical on Pope's Essay upon Criticism*, 1711, *Remarks upon 'Cato'*, 1713, and *True Character of Mr. Pope and his Writings*, 1716. His own original plays were dull and are interesting only because they illustrate his dramatic theories, among which was no slavish adherence to the unities. His adaptations of *The Merry Wives of*

Windsor (The Comical Gallant, 1702) and of *Coriolanus* (The Invader of his Country, 1720) have been criticised for vandalism. The first collected and complete ed. of D.'s critical writings is *The Critical Works of John Dennis*, ed. by E. N. Hooker (2 vols.), 1939, 1943. See H. G. Paul, *John Dennis, his Life and Criticism*, 1911.

Denny and Dunipace, burgh in Stirling-shire, Scotland, 7 m. S. of Stirling, on the R. Carron. The dist. is rich in historical associations, and there are numerous Pictish and Rom. remains. The Torwood, with its anct castle, has been a formation point in many battles. Sir Wm Wallace, the Scottish patriot, spent his boyhood here. The prin. industries are papermaking, and iron and steel founding. Coal is mined locally. Pop. 7000.

Denominations. The Three, Presbyterians, Baptists, and Independents—living in or near London. They had the privilege of presenting an address to the sovereign at certain times, and in 1727 organised 'the General Body of Protestant Dissenting Ministers of the T. D.'

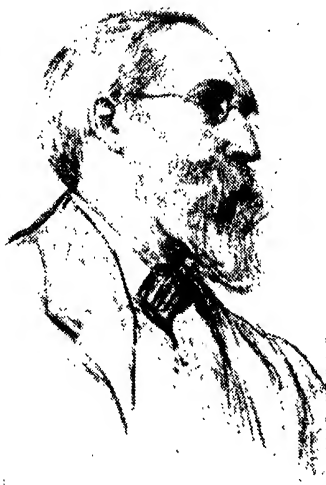
Denotation, see CONNOTATION.

Density. *Absolute D.*, term used in physics to express the quantity or mass of matter contained in any unit of vol. *Relative D.*, or sp. gr., is the comparison of the mass of the substance concerned with the mass of the same vol. of some standard matter, which for liquids or solids is generally taken as water at its temp. of maximum D. (4° C., 39° F.) and at ordinary pressure; for gases the standard is hydrogen at ordinary temp. and pressure. Since in the metric system, which is usually employed, the unit of mass is the mass of a ml. of water at 4° C., the relative D. is the same as the absolute D. expressed in g/ml. The least dense metal element known is lithium (0.53, if the D. of water be called unity); the densest is osmium (22.47); the D. of hydrogen is 0.0009. See SPECIFIC GRAVITY.

Dent, John Charles (1841–87), Canadian journalist and writer on historical subjects, b. Kendal, Westmorland. He was taken to Ontario in infancy. He was called to the Bar in 1865 and practised for a short period. D. returned to England and worked as a journalist there and later in Toronto. His pub. works include *The Canadian Portrait Gallery*, 1880–1; *The Last Forty Years: Canada since the Union of 1841*, 1881, in collaboration with Henry Scadding; *Toronto: Past and Present*, 1884; and *The Story of the Upper Canadian Rebellion*, 1885. See also J. King, *The Other Side of the 'Story of the Upper Canadian Rebellion'*, 1886.

Dent, Joseph Malaby (1849–1926), publisher, b. Darlington, where his father, the son of a small Swaledale farmer, kept a colourman's shop and taught music. After some early training as a bookbinder in his native tn, he went to London in 1867, working at his craft for 5 years before setting up his own workshop in Hoxton. A book-lover from the first, he began then to experiment in a small way as a book producer and publisher.

Having estab. himself in offices and a bindery in Great E. Street in 1888, he put forth some notably well-produced eds. of Lamb, and others of his favourite writers. He had already formed a friendship with some of the Toynbee Hall (q.v.) residents, and with them made excursions to Italy, which he revered as the cradle of European typography and the bookbinding art. He pub. many *éditions de luxe* of works on It. cities and was a shrewd discoverer of talent in young illustrators, among these being Aubrey Beardsley, R. Anning Bell, and Arthur Rackham. The Temple Shakespeare appeared in 1894 and the Temple Classics in 1896, both under the editorship of Israel Gollancz; and they were followed by pocket eds. of favourite



Drawing by Dora Noyes
J. M. DENT

authors, which quickly gained for him a reputation as a London publisher of the first rank. In 1897 the business was transferred to 29–30 Bedford Street, Covent Garden, where he planned the scheme which developed into Everyman's Library (q.v.). His idea was to build up a great 'city of books' on popular lines, and he always kept in view the type of reader who, like himself, had left school at 13 and must provide his own 'further education' by reading book after book in his spare time. In 1906 the manufacturing business moved to Letchworth in Herts, and in 1912 the publishing office moved across the street to Nos. 10–13, which Dent built and named Aldine House.

Dent also produced many series of educational books, which have proved their value by their wide circulation

throughout the schools of the Commonwealth. *Everyman's Encyclopaedia* in its original form was also due to his enterprise. Throughout his career publishers and book-lovers and the great reading public in America appreciated and supported his many and varied enterprises. In Canada, too, he formed a growing connection by his repeated visits, and in 1912 a branch Aldine House was opened at Toronto. He was succeeded as head of the firm by his son, Hugh Ralston D. (1874-1938), who in 1938 ed. his *Memoirs* (first privately printed, 1921).

Dent Blanche, see **BLANCHE, DENT**.

Dent-du-Midi, see **MIDI, DENT DU**.

Dental Service, National, see **NATIONAL DENTAL SERVICE**.

Dental Surgeon, see **DENTISTRY: TEETH**.

Dentalium, or **Elephant's Tusk Shell**, one of the genera of molluscs which form the class Scaphopoda. The shell is tusk-shaped and opens at both ends, from the larger of which the long foot appears and is used in creeping movements. The mollusc has tentacles around its mouth, is lacking in eyes and heart, and lives in muddy sand at great depths of the sea.

Dentatus, Manlius Curtius, Rom. gen. and one of the great heroes of the republic. As consul in 290 B.C. he conquered the Samnites, and during his second consulship in 275 he defeated Pyrrhus (q.v.), and afterwards retired to his Sabine farm. Recalled to fill the office of censor in 272, he undertook the construction of an aqueduct, but *d.* in 270 before its completion. D. was ranked upon as a model of the old Rom. virtues.

Dentil, in classical architecture, one of a series of cubical blocks, like teeth in shape, placed beneath the corona of a cornice. Generally the height of each D. is double its width, while the spaces between the blocks are one-third the height.

Dentine, see **TEETH**.

Dentistry, see **NATIONAL DENTAL SERVICE: TEETH**.

Dentition, process of development and cutting of the teeth. See **TEETH**.

Denton: 1. To 7 m. S.E. of Manchester, England; manufs. felt and silk hats. There is a light engineering industry. Pop. 27,612 (1934).

2. Vill. in the W. Riding of Yorks, England, 2½ m. N.E. of Ilkley, the bp. of Sir Thomas Fairfax.

3. Co. seat of D. Co., Texas, U.S.A., 34 m. N.N.E. of Fort Worth, raising cotton and grain, and manufacturing pottery and bricks. It is the seat of the N. Texas State College and of the Texas State College for women. Pop. 21,400.

D'Entrecasteaux, group of Brit. is., situated in the Pacific Ocean, off the S.E. coast of New Guinea in Papua. They consist of 3 prin. is., separated by narrow channels, with a total area of 1200 sq. m. Pop. 34,000. Their name is derived from the Fr. admiral, Bruni d'E. Exports are copra, pearl, and shell.

Denudation, or **Erosion**, wearing away of the surface of the earth, a process which is carried on by various agents.

The effect of D. is seen in the various features of the earth's surface, as riv. valleys, gorges, and the shapes of cliffs and rocks. Water in various forms—rivs., streams, rain, frost, and glaciers—is the great cause of D., though some is due to wind, to temp. change, and to plants and animals. The rivs. wear away their beds and make them wider with the continual flow of their water, and carry away particles of rock washed down by the rain or other agent, and so wear away the surface over which they flow, the amount of D. done by a riv. varying according to the region. Glaciers also are powerful in this respect, owing to the debris which they carry along in their courses. Rain wears away the surface of the rocks, both by beating on them and by chemical processes. Frost is instrumental in splitting the rocks to pieces, and in causing fissures in them; the sea wears away the bases of cliffs, thus causing the overhanging rock to give way, and altering from time to time the shape of the coast-line. The general appearance of the land, therefore, is due to the various denuding agents in any particular locality, and although many hundreds of years may pass before the change is perceptible, yet on examining the land it can be seen that it is always undergoing this D. See A. Holmes, *Principles of Physical Geology*, 1944.

Denver, cap. of Colorado, U.S.A., on the S. bank of S. Platte R., 15 m. from the E. base of the Rocky Mts. in a rolling plain. It is the largest city in the state, and the nearest large city to important gold and silver mines and oil shale deposits. The city is the official gateway to 12 national parks and 32 national monuments. Among the peaks visible from D. are Pikes Peak, Mt. Evans, Grays Peak, Longs Peak, and Torreys Peak. D. is now served by sev. railroads, transcontinental airlines, and highways, and has a direct rail route to the Pacific coast. The city is the financial, distribution, and industrial centre for a large livestock and agric. region. It manufs. mining and farm machinery, tyres, and other rubber products; there are large stockyards and oil-refining and motor-assembly plants. Furniture, electrical apparatus, explosives, clothing, and cotton and fibre products are also made. Canning and meat-packing are important. It is administrative H.Q. for sev. federal agencies, including the U.S. custom house and mint. Educational institutions include the univ. of Denver, univ. of Colorado Medical School, Loretto Heights College, Regis College, Rockmount College, and Westminster Law School. Near by are Fitzsimons Army Hospital, the Colorado School of Mines, a naval air station, and Lowry Air Force base. Points of interest are the capitol building, the Palace Theatre (1873), the Windsor Hotel (1880), the City and Country Building, the civic centre, and the Colorado Museum of Natural Hist. Pop. (1950) 415,786.

Denys St., see **DENIS**.

Deodand (Lat. *Deo dandum*, to be given to God), term used for anything which had

caused the death of a human being, whether that death was brought about intentionally or accidentally, as by the law the thing was given over to the Crown to be put to some good use, and thus 'given to God.' This practice was abolished in 1846.

Deodar, or *Cedrus deodara*, species of conifer, which occurs in the Himalayas. The plant is a beautiful evergreen tree,



DEODAR

the leaves persisting for over a year, and the cone takes 2 or 3 years in ripening.

Deodatum, see ST DIE.

Deodoriser (Lat. *de*, away from; *odor*, smell), substance used for destroying harmful smells, chiefly those which arise from decomposing matter. Charcoal and quicklime are very powerful D.s. Disinfectants may be D.s if they destroy smells, as for instance zinc chloride.

Deogiri, see DAULATABAD.

Déols, or **Bourg-Dieu**, Fr. tn in the dept of Indre, a suburb of Châteauroux (q.v.). There are ruins of a 10th-cent. abbey, and an interesting church, partly 12th cent. Pop. 3600.

D'Eon, Chevalier, see EON DE BEAUMONT.

Deoprayag, see DEVAPRAYAGA.

Deo-van (Col des Nuages), pass through the mts of Annam (q.v.), 45 m. S. of Hue (q.v.), through which passes a railway and the main N.-S. road of Viet Nam. The pass is about 2000 ft and noted for its unsurpassed views of sea and mts.

Deoxidation, see OXYGEN.

Department (Fr. *département*), term used for a territorial div. of France corresponding roughly to an Eng. co. Before the revolution France was divided into 34 provs., but in 1790 by a decree of the Assembly it was redivided into 83 D.s. Under Napoleon the number was increased to 130, but is now 90. The 3 D.s of Algeria, since 1881, have been regarded as D.s of France proper, and in 1947 the colonies of Martinique, Guadeloupe, Réunion, and Fr. Guiana were given the status of overseas D.s. D.s receive their names generally from a prominent riv. or mt contained within their boundaries.

Each D. is presided over by a *prefect*, and is divided into *arrons.*, each under a *sub-prefect*. The *arrons.* are divided into *cantons*, and the *cantons* into *coms.* corresponding to an Eng. *par.* Paris is in the D. of the Seine.

Depew, Chauncey Mitchell (1834-1928), Amer. politician, educ. at Yale Univ., and called to the Bar in 1856. His political career began in 1862. From 1899 to 1911 he was U.S. senator (for New York). D. was chairman of the board of directors for 3 railroads, including the New York Central and Hudson R. Railroad Company.

Dephlegmator, section of a distilling apparatus which separates vapours of different boiling points, the less volatile being condensed and returned to the still. The simplest form of D. is an elongated plain or bulbous tube emerging from the still in which condensation results from air-cooling, the surviving vapours roughly representing the more volatile constituents. The most effective D., however, consists of a column of bulbs so arranged that the condensed vapours are temporarily retained, while the vapours from the still pass through them. The result is that an exchange is continuously effected between the more volatile constituents of the condensed liquid and the less volatile constituents of the vapours arising from the still. If the heat is sufficiently regular, it is possible to tap distillates of different boiling points according to their distance from the source of heat. Other types of D.s consist of a packed column, bubble plate column, or variable reflux head.

Depilatories (from Lat. *depilare*, to pull out the hair), chemical agents, such as calcium hydro-sulphide, or a mixture of pitch, resin, and lime, used for the removal of superfluous hair from the scalp, face, or other skin surface. Electric needle treatment, known as electrolysis, is the modern and most effective depilatory. Irradiation of the scalp with X-rays is used when complete removal of the hair of the head is necessary, as, for instance, in the treatment of ringworm.

D'Epinay, Louise, see EPINAY.

Deploy, military expression, meaning literally to unfold. A gen. is said to D. or spread out his troops when he so alters their formation as to present a wider front to the enemy, his object being to have as many weapons as possible on the front and fighting line.

Deportation, term revived during the First World War to describe the practice adopted by Germany of deporting the civil pop. of an enemy country which had been occupied. This was carried out in Belgium, and the practice was adopted largely to secure what was in effect slave labour. On 3 Oct. 1916 a decree was issued from Ger. general H.Q. authorising Ger. military courts to deport, for the purpose of forced labour, any unemployed Belgians. Thousands of men were compelled to work in Germany, thus releasing men for service in the field. During the Second World War Germany resorted to the same practice on an even larger scale, and the forced labour thus secured was

organised with thoroughness and brutality as a part of the Ger. war machine. It is estimated that some 3,000,000 Poles were put to forced labour in Germany during the course of the war. Over 1,000,000 Poles were also deported to Russia in 1939, and of these a number were later drafted into the Polish Army which was created in the U.S.S.R. to fight against Germany. France also suffered severely during the Ger. occupation, and the number of Frenchmen deported for labour in Germany amounted to 765,000. In 1943 there was also wholesale D. of Jews from Denmark at the hands of the Ger., and the civil pop. of Norway, too, suffered in the same way. After the war ended, Poland and the Soviet Union annexed Ger. ter. E. of the Oder-Neisse line, and the Ger. pop. in this area was deported in its entirety, in circumstances entailing considerable hardship. (See also DISPLACED PERSONS.) For D. as a statutory punishment during the 17th and 18th cents. see TRANSPORTATION.

Deposit, in the law of bailments (borrowed from the Rom. law), signifies a movable thing which a man puts in the hands of another to keep till it is asked for, nothing being given to the depositary for his custody of the thing. The benefit being entirely unilateral, the depositary is not liable for loss or deterioration, provided he is not guilty of dishonesty or gross negligence. If, however, he voluntarily undertook the custody of the thing, he would be answerable for loss or damage occasioned by only slight neglect. Money is said to be on D. with a banker as opposed to money on current account. The transaction is really a loan, repayable by the banker on demand with or without interest, according to agreement. In contracts for the sale of land D. means a sum customarily given in part payment of the purchase money as a guarantee of good faith.

Deposition. By the action of the various superficial or epigene agents of change (wind, sun, rain, running water, and frost) rocks are disintegrated and the material transported from place to place, finally forming the sev. deposits classified below. *Aeolian deposits* are those deposits formed by the action of the wind. Examples of these are the sand dunes which occur in our coasts and the remarkable loess found in the valley of the Rhône and extending over the whole of central Europe. *River deposits* occur in banks and terraces. The sediment carried by the riv. in suspension is laid down where the current is slackest along the riv. course. Thus, alluvial fans and cones are formed at the bases of hills where there is a sudden decrease in the gradient of the riv. When a stream reaches a lake or the sea, its current is destroyed and the sediment in suspension is dropped, giving rise to deltas and lacustrine deposits. The main types of riv. deposits are alluvial cones and fans, alluvial plains, deltas and levees. *Glacial deposits* are occasionally of considerable thickness, as in terminal moraines (see GLACIERS). *Lacustrine deposits* may be mechanically formed, as

when sediment is deposited from rivs., or may be chemically or organically formed. The chemically formed deposits are chiefly deposits of sodium chloride and carbonate and sulphate of lime, caused by supersaturation of the waters due to evaporation. The organically formed deposits may be formed from calcareous shells or from the siliceous remains of diatomaceous plants. *Marine deposits* are of the greatest importance, and may be divided into 2 classes: (1) shore or littoral deposits; and (2) deep-sea deposits. The former consist of gravel, sand, or mud brought down by rivs. or worn off the coasts by wave action, or of limestone made up of the calcareous shells or skeletons of the coastal fauna. The material brought down by rivs., if not directly deposited to form deltas, may be carried out and deposited on the sea bottom. The deposits thus formed may vary, alternately coarse and fine, according to the state of the riv.; but the material sorted by wave action is generally arranged in order of coarseness, gravel nearest the coast, then sand, then fine mud and silt. These mechanical deposits are found fringing the land to a distance of from 100 to 200 m. out to sea, corresponding more or less with the 100-fathom submarine contour. On the outer edges of this fringe are found the blue, red, and green, and the volcanic muds, together with some deep-sea sands carried out by strong currents from the continental shelf. Beyond this depth we find the second class of marine deposits. These are chiefly organic, and are either calcareous or siliceous. The Globigerina ooze, which occurs throughout the Atlantic Ocean and in parts of the Indian and Pacific Oceans, consists of the calcareous shells of Foraminifera, which live at the surface of the water, but which after death sink and accumulate upon the ocean floor. Beyond a depth of about 2 m. this ooze is not found, since the shells are dissolved before they reach the bottom. On the ocean floor in the deeper parts, below 2½ m., are found the siliceous oozes, i.e. the radiolarian and diatomaceous oozes. The former is made up of the siliceous shells of Radiolaria, and is found in the E. Indian Ocean and in the Pacific. The latter, consisting of the siliceous frustules of diatoms, is found in a wide belt encircling the S. Ocean. Red clay is a red-brown deposit, and consists of the insoluble residue of Foraminifera, manganese nodules, glauconite crystals, pumice, volcanic and meteoric dust, and phosphatic nodules. It is found in the deepest parts of the oceans below 2500 fathoms, and contains fossils such as the teeth of sharks and the ear bones of whales. The greater part of the floor of the Pacific Ocean is covered by the red clay, which is the most widely spread oceanic deposit. For classification of deep-sea deposits see Sir John Murray's *Report of Challenger Expedition*, 1891.

Deposition, in law, the written testimony of a witness in a judicial proceeding. D.s. before a magistrate are the sworn statements or affirmations of those who are

cognisance of the facts relating to a crime for which some person has been arrested. These statements are committed to writing by the magistrate's clerk, and read over and signed by the witness making them and by the magistrate. Such D.s are not evidence at the trial of the accused, but those of a witness who is dead or too ill to travel are evidence. D.s, whether in favour of or against the prisoner, may be taken before the committing magistrate in the presence of the prisoner, and subsequently given in evidence at the trial. To perpetuate the testimony of persons whose death is apprehended, or who are dangerously ill, a magistrate has power to take their evidence down in writing and transmit it to the proper quarter to be read at the trial in the event of the deponent proving unable to appear. In all these cases the prisoner must be given an opportunity of cross-examining the deponent at the time the D. is taken. In civil cases, unless the court orders otherwise, witnesses must give oral evidence. In interlocutory proceedings (q.v.), some actions in the Chancery Div. (q.v.) and the Divisional Court of Queen's Bench Div., and applications in the divorce court for maintenance and custody, evidence is given on affidavit.

Deposition of Clergymen is usually the result of immorality, matrimonial infidelity, or heresy. It involves the loss of benefice and holy orders, and is administered by the eccles. courts of the Anglican and Scottish Churches.

Depreciation. *see* BOOK-KEEPING.

Depression. *see* INSANITY.

Depression, Cyclonic. *see* METEOROLOGY.

Depression of the Land. *see* SUBSIDENCE.

Deprets, Agostino (1813-87), lt. statesman. He joined Mazzini's Young Italy movement as a young man. At first he was an opponent of Cavour, but later supported him, and was sent by Cavour to attempt a reconciliation with Garibaldi in Sicily (1860). His premiership dates, with one brief interval, from 1876 to 1887. Though his administration was marred by extravagance in finance he was instrumental in enlarging the suffrage and in creating the Triple Alliance.

De Profundis (Lat. 'out of the depths'), title and first words of Ps. cxxx. (Vulgate (XXXIX), one of the 7 penitential psalms. In the Roman rite it forms part of the office for the burial of the dead, for whom it is often recited.

Deptford (meaning 'deep ford'), parl. and metropolitan bor. of London, on the S. bank of the Thames immediately W. of Greenwich. It was a fishing vill. when Henry VIII founded the shipbuilding yard here in 1512 (closed in 1869), which, together with the yard at Woolwich, proved to be of paramount importance in the development of the Royal Navy, and which led to rapid development of D. into a tn. The royal victualling yard of the navy was estab. here in 1745. Among historic events in D. are Drake's reception of knighthood, Marlowe's death in a tavern brawl, and Peter the Great's residence at John Evelyn's house. It is a

bor. of many streets and few open spaces, but there is a park of 11 ac. on the site of Evelyn's house. Goldsmiths' College, a technical school founded in 1891 by the Goldsmiths' Company, is now incorporated in London Univ. The tn originally consisted of 2 pars., but that of St Nicholas is now in the bor. of Greenwich. D. returns 1 member to Parliament. Area 1564 ac.; pop. 73,800.

Depth Charge, explosive device for sinking hostile submarines. It is a case containing a high explosive charge ignited by a hydrostatic valve. This valve can be set to the required depth below the surface. Even if the explosion fails to sink the submarine it may be sufficient to force it to rise to the surface, when it may be sunk by gun fire. A D. C. may either be released from an inclined chute or projected by a mortar. The second method has the advantage that it enables the charge to be fired at its objective, instead of delaying action until the vessel reaches the point where the submarine is located. Between 30 and 40 Ger. submarines were sunk by D. Cs in the First World War, and they were used with success by the R.N. in the Second World War.

De Quincey, Thomas (1785-1859), critic and essayist, b. Manchester. The aristocratic 'De' was assumed by himself, his father, a merchant, whom he lost while he was still a child, having been known by the name of Quincey. His *Autobiographic Sketches* give a vivid picture of his early years at the family residence of Greenheys, and show him as a highly imaginative and over-sensitive child. He was educ. at Bath Grammar School, next at a private school in Wilts., and in 1801 was sent to Manchester Grammar School, from which he ran away, and for some time rambled in Wales. Tiring of this, he went to London in 1802 and led a Bohemian life. His friends, thinking it time to interfere, sent him in 1803 to Worcester College, Oxford. This did not, however, preclude brief interludes in London, on one of which he made his first acquaintance with opium, which was to play so disastrous a part in his future life. In 1807 he became acquainted with Coleridge, Wordsworth, and Southey, and soon afterwards with Charles Lamb. He paid various visits to the Lakes, and in 1809 settled at Townend, Grasmere, where he pursued his studies, becoming gradually more and more enslaved by opium. His marriage to Margaret Simpson, daughter of a farmer, took place in 1816.

Up to this time he had written nothing, but had been steeping his mind in Ger. metaphysics and out-of-the-way learning of various kinds; but in 1819 he sketched out *Prolegomena of all Future Systems of Political Economy*, which, however, was never finished. In the same year he acted as editor of the *Westmorland Gazette*. His true literary career began in 1821 with the pub. in the *London Magazine* of *The Confessions of an English Opium-Eater*. Thereafter he produced a long series of articles, some of them

almost on the scale of books, in *Blackwood's* and *Tait's* magazines, the *Edinburgh Literary Gazette*, and *Hogg's Instructor*. These include 'Murder Considered as One of the Fine Arts,' 1827, and, in his later and more important period, 'Suspisia de Profundis,' 1845. 'The Spanish Military Nun,' 1847, 'The English Mail Coach' and 'The Vision of Sudden Death,' 1849. In 1853 he began a collected ed. of his works, which was the main occupation of his later years. He had in 1830 brought his family to Edinburgh, which, except for 2 years, 1841-3, when he lived in Glasgow, was his home till his death. In 1837, on his wife's death, he placed the children in the neighbouring village of Lasswade, while he lived in solitude, moving from one dingy lodging to another as each in turn became choked up with an accumulation of papers. At the time of his death there were 6 such sets of lodgings, on all of which he was paying rent.

De Quincey stands out among the masters of style in the Eng. language. In his greatest passages, as in the 'Vision of Sudden Death' and the 'Dream Fugue,' the cadence of his elaborately piled-up sentences falls like cathedral music, or gives an abiding expression to the fleeting pictures of his most gorgeous dreams. His character unfortunately bore no correspondence to his intellectual endowments. His moral system had in fact been shattered by indulgence in opium. His appearance and manners have been thus described: 'A short and fragile, but well proportioned frame; a shaven and compact head; a face beaming with intellectual light, with rare, almost feminine, beauty of feature and complexion; a fascinating courtesy of manner; and a fullness, swiftness, and elegance of silvery speech.' The standard ed. of his works, 14 vols., 1889-90, was by Prof. D. Masson, who also wrote a life in 1881. *See also* lives by H. A. Page, 1877; J. Hogg, 1895; M. Elwin, 1935; and H. A. Eaton, 1936.

Dera Ismail Khan, tn of Pakistan, from which roads lead in various directions to the hills of the frontier. There are interesting remains near by suggesting an old Hindu kingdom.

Derain, André (1880-1954), Fr. painter, b. Chatou. He studied painting in Paris and in 1899 met Matisse. He joined with Matisse and Vlaminck in the free use of bright colour that caused them to be described as 'Les Fauves.' After 1918 he painted in the S. of France and Italy. In his later work he sought old master qualities. He also illustrated books and designed for the stage. *See* E. Faure, *Derain*, 1923.

Derating Act, *see* RATES AND RATING; LOCAL GOVERNMENT FINANCE.

Derayeh, *see* DARAIYEH.

Derbent (Persian *Derbend*), tn on W. shore of Caspian Sea, 150 m. NW. of Baku, the second industrial and cultural centre of Daghestan (q.v.). It has an ancient citadel and mosques. It was founded in the 6th cent. by Persians, and has been Russian since 1806. Pop. (1926) 23,000 (c. 1914, 33,000).

Derby, Earls of, an Eng. title which has been borne by the family of Stanley since 1485. Earlier it had been held by the family of Ferrers. The family of Stanley is of very considerable antiquity. *Thomas, 2nd Baron Stanley* (c. 1435-1504), was created earl of D. in 1485, for his services at Bosworth, where he crowned the victor. *Edward Stanley, 3rd earl* (1508-72), took a prominent part in political and military affairs. He was a commissioner at the trial of Lady Jane Grey, and a privy councillor under 3 sovereigns. *Henry Stanley, 4th earl* (1531-93), married in 1555 Margaret Clifford, granddaughter of Mary Tudor, sister of Henry VIII. He was a commissioner at the trial of Mary Queen of Scots (1586); 2 years later he was sent on a mission to Spain, and on his return was appointed lord high steward. Of the successors to the earldom, *Edward George Geoffrey Stanley, 14th earl* (1799-1869), was the most notable. He was b. Knowsley and educ. at Eton and Christ Church, Oxford. Entering Parliament as a Whig in his 23rd year, he was appointed by Canning in 1827 under-secretary for the colonies, an office he retained under Goderich. In the Grey administration (1830) he became chief secretary for Ireland. He left the Whigs in 1834 and in 1841 accepted the colonial secretaryship under Peel, but resigned in 1844 over the free trade issue. In 1844 he went to the House of Lords as Lord Stanley. It was not until 1851 that he succeeded to the earldom. In the following year he formed a protectionist administration, in which Disraeli was chancellor of the exchequer. This administration held office only a few months; and D. became prime minister again in Feb. 1858, but his second ministry only lasted 16 months. D. became prime minister for the third and last time in 1866, but 2 years later ill-health forced him to resign, and he was succeeded by Disraeli. As a statesman D. was not outstanding; he was, however, a first-class speaker and a very fine classical scholar. A good deal of the credit given to him by his contemporaries, especially in the reconstruction and reorganisation of the Conservative party after the fall of Peel, really belonged to Disraeli. His eldest son, *Edward Henry Stanley, 15th earl* (1826-93), educ. at Rugby and Trinity College, Cambridge, was also a statesman. He was under-secretary for foreign affairs in 1852, and colonial secretary in 1858. In D.'s third ministry he became foreign secretary, and retained that position under Disraeli. He succeeded to the earldom in 1869, and was again foreign secretary under Disraeli (1874-8). He became a Liberal in 1880, and 2 years later became colonial secretary under Gladstone; but he was opposed to Home Rule, and became leader of the Liberal Unionists in the House of Lords. Like his father he was a good speaker, and it is to the credit of his sincerity that by leaving the Conservatives in 1880 he sacrificed his succession to the premiership. He was succeeded by his brother, *Frederick Arthur Stanley* (1841-1908), *Baron Stanley*

of Preston (created Aug. 1886). He was educ. at Eton and was M.P. for Preston, for N. Lancs. and for Blackpool successively from 1865 to 1886; a lord of the admiralty in 1868, financial secretary to the War Office, 1874-7, to the Treasury, 1877-8, secretary of state for war, 1878-80, vice-president of committee of Council on Education, 1885, secretary of state for colonies, 1885-6, president of board of trade, 1886-8, and governor-general of Canada, 1888-93. He was succeeded by his oldest son, *Edward George Villiers Stanley* (1865-1948), separately noticed as 17th earl (see *DERBY*). The 18th Earl D. is *Edward John Stanley* (b. 1918). He succeeded his grandfather in 1948.

Derby, Edward George Villiers Stanley, 17th Earl of (1865-1948), politician, educ. at Wellington College, and served in Grenadier Guards 1885-95. He was aide-de-camp to the governor-general of Canada (his father), 1889-91. D. returned from Canada in 1891, and in 1892 was elected as a Unionist for the Westhoughton div. of Lancs. and sat for the constituency until 1906. Two years after his election he was appointed a junior lord of the Treasury. During the S. African war he was first chief press censor and later private secretary to Lord Roberts. He became financial secretary to the War Office in 1900, and in 1903 he was appointed postmaster-general with a seat in the cabinet—an office which he held until 1905. In 1908 he succeeded to the earldom. As director-general of recruiting during 1915-16, first under Lord Kitchener and later under Lloyd George, he performed one of his most conspicuous public services by organising what came to be known as the D. scheme of voluntary enlistment—the enlivening effort made by the first coalition gov. in the First World War to adhere to the voluntary principle. When Lloyd George formed the second coalition gov. in Dec. 1916, D. became secretary of state for war. Early in 1918 he was appointed Brit. ambas. in Paris, and remained there for nearly 2 years. When Bonar Law became prime minister of a Conservative gov., which most of the ex-cabinet ministers of his party were debarred from joining by their loyalty to the coalition, D. returned (1922) to his old post as war minister and only retired with the defeat and resignation of the first Baldwin cabinet in Jan. 1924. That was his last cabinet office, and therewith his political career ended, for he waived his claims to further office when the ex-coalition Conservatives returned to the fold. D. was a great patron of the turf. His horses were successful in many of the great events under the rules of the Jockey Club, but it was not until 1924 that he won the Derby with Sansovino; in 1933 he was again successful with Hyperion, one of the best horses in thoroughbred hist. He took the 1912 substitute race with Watling Street.

Derby, parli., municipal, and co. bor., and co. tn. of Derbyshire, England. on the R. Derwent, 125 m. from London. The form D. is derived from the Dan. name

Deoraby given to a former Anglian settlement. Up to the Domesday survey D. was a market tn. and the defensive earthworks and keep erected under William the Conqueror were known as Copecastle, denoting 'market castle.' Later the right to have a merchant guild was confirmed, together with a monopoly in cloth-dyeing. Records show that D. sent its first 2 bor. members to Edward I's 23rd parliament in 1295. Half the total pop. of the co. died during the Black Death (1349), and the plague of 1592 caused further widespread suffering in D. D.'s charter was confirmed sev. times, and in James I's reign 6 fairs were permitted. In 1637, under a charter of Charles I, local gov. was vested in a mayor, 9 aldermen, and a number of brethren and burgesses, and the number of fairs permitted was increased to 7. D.'s last charter was granted in 1682 by Charles II. The tn. began to emerge as a manufacturing centre at the end of the 17th cent., and in 1717 John Lombe introduced England's first silk mill, on the banks of the Derwent. The opening of the D. canal (1836) gave an impetus to industry, and 3 years later the railway reached D., the line at first running between Nottingham and D. only. Soon afterwards the Birmingham, Gloucester, and D. Junction railway was opened, and in 1841 D. was linked by rail to Leeds. On the amalgamation of the separate companies into the Midland Railway Company D. became its H.Q., and this was to affect the tn.'s later development. D. has numerous historic and impressive buildings. Dominating the top of St Mary's Gate is D. cathedral, dedicated to All Saints, standing in Queen Street, the second highest (210 ft.) par. church in England. The 16th-cent. tower is a fine example of Gothic architecture. D.'s main thoroughfare, St Peter's Street, takes its name from the ancient church standing there, 1 of 6 D. churches mentioned in Domesday Book. It is now largely Perpendicular in style, with some Norman features. Other churches are St. Alkmund's (decorated), rebuilt in 1846; St. Werburgh's, named after Werburgha, daughter of the king of Mercia, the church where Dr. Johnson married Mrs. Porter (9 July 1735). The chief Rom. Catholic church is St Mary's, designed by Pugin. In the Wardwick is the free library and museum, the latter notable for the Prince Charlie room with memories of the invasion by the Young Pretender. The museum and art gallery, together with the library in the same building, were presented to the tn. in 1878 by Michael Thomas Bass, M.P., and the art gallery was extended in 1914-15. At St Mary's Gate is the co. hall, built in 1660, and modernised in 1866, though the facade remains unaltered. Features of old D. include the 'Dolphin,' an overhanging black-and-white inn of 1530; D. school, first mentioned in a charter of 1160 (though the present building dates from 1554), where Flamsteed was a pupil; the first Methodist preaching house in St Michael's Lane; the tall square tower,

with arched and canopied roof, of John Lombe's silk mill; the chapel of St Mary's of the Bridge, dating from the 13th cent.; and the house in Exeter Street where Herbert Spencer was b. There are 3 nurseries, 52 primary, 19 secondary modern and 4 grammar schools, and 1 Junior college of art. The D. College of Art for advanced courses in art is administered by the local authority. A school of science was commenced in 1870 and is now called the D. Technical College. The D. training college, founded 1850 by the diocese of Lichfield, became in 1927 the D., Southwell, and Lichfield College. Institutions include Queen Street baths, built in 1932; the Royal Infirmary, the hospital for women, and 4 other hospitals. Features of modern D. created under the central improvements scheme are the council house, the bus station, the Riverside Gardens, Morledge Market, and the cattle market. The oldest park belonging to the corporation is the Arboretum, given to the tn in 1840, and laid out by the architect J. C. Loudon; other parks include Darley Abbey (60 ac.), Markeaton Park (200 ac.), the Racecourse Park (125 ac.); Riverside Gardens, which, like the Arboretum, is in the midst of a densely built-up area; the municipal sports ground; and various miscellaneous parks and recreation grounds. The airport at Burnaston, 5 m. from D., is owned and controlled by the D. Corporation.

D. is a great industrial centre, renowned for the quality of its engineering products. As H.Q. of the old Midland railway it soon became an important railway centre, not only for operational and administrative purposes, but by virtue of the large locomotive, carriage, and wagon works built near the station. After 1900 the process of industrial expansion continued, with the estab. of the great Rolls-Royce factory in 1906. Although D. is not one of the largest of midland industrial tns, there is considerable diversity of industries: aero engines, aircraft components, iron castings, artificial silk, plastics, sugar refining, electric motors, cables, can-making machinery, power presses, mining equipment, steam units for electric-power plants, hosiery, rayon, narrow fabrics, and tapes, porcelain (Royal Crown Derby porcelain), paints and chemicals.

D. is governed by a council of 64 members, of whom 16 are aldermen, elected by the councillors, who number 48, and are elected by the citizens.

D. is the seat of a bishop (see created 1927). The bor. is divided into 2 parl. constituencies. Pop. (est.) 200,000, including suburbs.

Derby. Between 1745 and 1750 a factory was founded at D., producing a soft-paste porcelain (q.v.) under Wm Duesbury, who d. 1786. From 1786 to 1811 it continued to produce a fine porcelain, known as 'Crown Derby' because of the mark used, and from 1811 to 1848 a bone china known as 'Bloor Derby' (because it was owned by Robert Bloor), the decoration of which marked a fall from the high artistic standards. After the Old Derby Works closed in

1848, some of the potters estab. a small factory in King Street, Derby, which lasted to 1870. An entirely new company opened in 1876, called the 'Royal Crown Derby Porcelain Company', which makes a high-quality china ware (q.v.). See J. Haslem, *The Old Derby China Factory*, 1876; F. B. Gilhaspy, *Crown Derby*, 1951. See BISCUIT.

Derby Stakes. celebrated horse-race, instituted by the earl of D. in 1780. The D. is a sweepstake of 100 sovereigns each, 50 sovereigns forfeit if declared by Tuesday in the week before running, or 10 sovereigns only if declared by the first Tuesday in July in the year before running. Five thousand sovereigns, including a gold trophy, is added to the sweepstake, the winner taking 85 per cent, the 2nd 10 per cent, and the 3rd 5 per cent of the total stakes. The race is run on the 2nd day of the summer meeting at Epsom, Surrey, falling sometimes in May, sometimes in June; on D. Day the road from London is covered by a continuous stream of traffic. There is also a D. run every spring at Churchill Downs, the famous race track in Louisville, Kentucky, U.S.A.; the winner receives \$10,000. See HORSE-RACING.

Derbyshire, midland co. of England, bounded by Yorks, Cheshire, Staffordshire, Leicestershire, and Notts. D. contains numerous antiquities, including the pre-historic circle of Arbor Low, the most important in England after Stonehenge and Avebury. Other places of interest are the ruined abbeys of Dale and Beauchief, the Saxon crypt at Repton, and the mansions Haddon Hall, Hardwick Hall, and Chatsworth House (magnificent seat of the dukes of Devonshire). The co. was associated with the retreat of Prince Charles Edward (1745) and the reversal of the Stuarts' fortunes. The S. part of the co. is fertile, and produces cereals and root crops, but the N. is very rugged and mountainous, and the Peak dist. provides some of the most picturesque scenery in England. Here, in the S. spurs of the Pennine chain, rise the numerous rvs. of the co., tribs. of the Mersey, Don, and Trent. After the Trent itself, which intersects the S. part of the co., the chief rvs. are the Derwent, Wye, Dane, Goyt, Dove, and Rother. In the neighbourhood of Buxton and Matlock are valuable medicinal mineral springs. One of the chief industries of the co. is coal-mining, chiefly in the E.; other minerals and metals worked are iron, lead, zinc, barytes, fluorspar, and gypsum. Sandstone, marble, and pipe-clay for the potteries are also obtained. Sheep-farming is extensively carried on in the N. hills, while the S. plains form a noted corn-growing and dairy-farming dist. Other industries are porcelain, silk, cotton, hosiery, iron, woollen, lace, and elastic-web manufs. The chief tns are Derby (the co. tn) Matlock, Buxton, Chesterfield, Glossop, Ilkeston, and Long Eaton. D. returns 9 members to Parliament, 2 for the bor. of Derby and 7 for the co. Area 643,572 ac. (land and inland water); pop. 826,000.

Derocto, or **Atargatis**, Gk forms for a Syrian combination of Atar and Até, names of a goddess worshipped in Syria, and possibly of Lydian origin (cf. Cybele, Attis). The main shrine at Hierapolis is described in detail by Lucian (*De Dea Syria*). Gk writers tell a legend of her as half-fish (Diodorus Siculus, II, 4). She is apparently equivalent to Astarte (q.v.) and was worshipped like her with sexual rites, her priests (*Galli*) being eunuchs, self-castrated in a religious frenzy at her orgies. The fish and dove were sacred to her as to Astarte.

Dercum, **Francis Xavier** (1856-1931), Amer. neurologist, b. Philadelphia. In 1888 he described the disease known as D.'s disease (*Adiposis dolorosa*). His chief works are *Clinical Manual of Mental Diseases*, 1913; *Biology of the Internal Secretions*, 1924; and *Physiology of the Mind*, 1925. Modern treatment of certain mental disorders owes much to D.'s pioneering work in showing the relationship between such diseases and the endocrine glands.

Derecske, tn of Hungary, in Hajdu-Bihar co., 10 m. SSW. of Debrecen (q.v.). It has a trade in cereals, livestock, and tobacco. Pop. 10,500.

Dereham, **East**, mrkt tn of England, in Norfolk, 16 m. NW. of Norwich. There are iron foundries, malt-houses, and a furniture factory. A monument has been erected to Wm Cowper, the poet, who took up his residence here in 1796, and is buried here. George Borrow was b. here in 1803. Pop. 6,571.

Derelet, term in Eng. law, denoting any property which the owner has deserted or wilfully cast away. It is most commonly applied to a ship abandoned by the capt. and crew. The first comes to a wreck can claim salvage from the Crown or from the persons who have a right to unclaimed D. vessels. Land reclaimed from the sea is said to be D. (i.e. forsaken by the sea, from Lat. *dereelinquere*), and belongs either to the owner of the adjoining lands, supposing it is given up gradually, or to the Crown in case of a sudden and considerable recession of the sea.

Derg, **Lough**, 4 m. NW. of Pettigo, co. Donegal, Rep. of Ireland, is 3 m. long by 24 m. broad, with an area of 24 sq. m. It has a beautiful aspect, in spite of its wild surroundings, being studded with many small is. Saint's Is. has the remains of a ruined priory. Station Is., the reputed scene of St Patrick's purgatory, is one of the most celebrated holy places in Ireland, being visited by pilgrims from all over the world between 1 June and 15 Aug.

Derham, **William** (1657-1735), philosopher and divine, b. Stoulton, near Worcester. In 1696 he pub. *The Artificial Clockmaker*, and from 1711 to 1712 he was Boyle lecturer. His other works are *Physico-Theology*, 1713; *Astro-Theology*, 1715; *Christo-Theology*, 1730; and *A Defence of the Church's Right in Leasehold Estates*, 1731.

De Rivera, **Primo**, see PRIMO.

Dermatine, mineral compound with a

sp. gr. of 2.1, found in Waldheim, Saxony, and consisting of silica, magnesia, protoxide of iron, and water. It is reniform, stalactitic, brittle, and resinous, coloured blackish-green with yellow streaks.

Dermatitis, inflammation of the skin. See SKIN, Diseases.

Dermatology (Gk *derma*, skin), the science of the treatment of the skin and skin diseases. See SKIN.

Dermostidae, a family of Coleoptera, contains numerous species of beetles which are harmless when adult, but in the larval stage do much damage to the collections of naturalists, and are particularly destructive to skins.

Derna, coast tn in Cyrenaica. It is situated on a bay which is frequently inaccessible during spring and winter, in an oasis of date palms and bananas. After Benghazi it is the most important settlement in Cyrenaica. The tn changed hands sev. times during the campaigns in N. Africa in the Second World War. It was captured by the Brit. on 30 Jan. 1941, and reoccupied by the Italians on 8 April, recaptured on 22 Dec., and again reoccupied by the Ger. and It. armies on 7 Feb. 1942. It finally fell to the Allies in the Eighth Army advance after El Alamein in Nov. 1942. Pop. 21,547.

De Robeck, **Admiral Sir John Michael** (1862-1928), 2nd son of 4th Baron de R. of Gownan Grange, Nans. Eirc. Entered the R.N. as a cadet, 1875; capt., 1902, rear-admiral, 1911, Vice-admiral, 1917, admiral of the fleet, 1925. At the outbreak of the First World War was appointed to command of 9th Cruiser Squadron, and was engaged in the protection of commerce on the Finisterre station, where he captured the N.-Ger. Lloyd steamer *Schlesien*. He was appointed second in command of the fleet at the Dardanelles early in 1915, and succeeded to the chief command on 16 Mar. 1915. At the end of 1916 he was appointed to command the 2nd Battle Squadron of the Grand Fleet, a position he retained to 1919, when he was appointed commander-in-chief of the Mediterranean fleet. At the same time he was Brit. high commissioner at Constantinople pending the signature of Turkey to the peace treaty. In 1922 he was appointed commander-in-chief of the Atlantic fleet and held that position until 1924.

De Rougemont, **Louis**, real name **Henri Louis Grin** (1847-1921), pseudo-explorer, native of Gressy, Switzerland. Became known first through his address to the anthropological section of the Brit. Association, on 9 Sept. 1898, in which he claimed to have lived for 30 years among the Australian aborigines. His imaginary adventures in company with an Eskimo named Etukishuk were pub. serially in the *Wide World Magazine*. His complete exposure as an impostor was made in the *Daily Chronicle*.

Déroulède, **Paul** (1846-1914), Fr. man of letters and politician, b. Paris, studied law, and was called to the Bar in 1870. During the Franco-Prussian war he was taken prisoner at Sedan. His *Chants du*

soldat, pub. In 1872, achieved such popularity that in 1875 he pub. his *Nouveaux Chants d'un soldat*. Gounod wrote the music for his patriotic hymn, *Vive la France*, which was sung at the exhibition of 1878. His name is especially associated with the *Ligue des patriotes*, which he instituted in 1882. But when he tried to use the organisation to promote the cause of Boulanger, he was obliged to retire from his presidency. The league was suppressed by the gov. in 1889 as a political menace. Deputy for the first time in 1889, he became notorious for the violence of his anti-Dreyfus policy. Banished in 1900 for attempting to overthrow the constitution, he was allowed to return to France in 1905.

Derpt, see TARTH.

Derry, see LONDONDERRY.

Dertosá, see TORTOSA.

De Ruyter, Michiel Adriaanszoon (1607–1676). Dutch naval commander, *b.* Flushing, where there is a monument to him in the Jakobskerk. A capt. in 1635, he was stationed some time in the E. Indies, and in 1647 sank a detachment of Algerian ships off Sallee. In 1652 he succeeded in preserving his convoy of merchantmen in spite of the conflict with the Eng. fleet near Plymouth. During the war of 1652–4 de R. ably seconded van Tromp, so that at the close of the struggle the Dutch leaders had at least held their own against Blake and Monck. During the second Eng. war de R. obtained a narrow victory, after a grim fight, over Monck in 1666, but was himself obliged to retreat to Dutch harbours before Ayscue a little later in the same year. But it was in 1667 that de R.'s daring brought him his highest glory, for with de Witt he sailed up the Medway as far as Chatham, and there destroyed all the Eng. shipping. In 1659 he had aided Denmark by conquering the Swedish fleet. In 1672 he won some advantage over the combined Eng. and Fr. fleets in Solebay, but in 1676, whilst engaging in a desperate encounter with the Fr. Adm. Duquesne at Syracuse, he was mortally wounded.

Dervish (Persian, derivation unknown). Before Islam was a century old, men adopted ascetic practices; some adopted continuously, i.e. every other day throughout the year, and of one it was said that he always looked as if he were coming from a funeral. Before the end of the 2nd cent. some led a communal life under a teacher, and a little later houses were built where men lived or met for religious exercises in common. Many were not satisfied with their Muslim public worship and sought additional ways of communing with God, laying stress on His love for men and His desire to have men love Him. This broke down the barrier set by orthodoxy between God and man (*viz.* 'nothing is like Him') and sometimes led to pantheism and also to antinomianism when men claimed to be so near to God that it did not matter what they did. In the 12th cent. brotherhoods were formed, each under a head who claimed to have received a special instruction, handed down through a chain of transmitters

from the prophet or one of his companions. A central convent was founded, daughter houses grew out of it and sent their contributions to the head. A member of such an order was a D. and there were usually lay brothers in addition to the full members. Often the headship was kept in the founder's family. Each order had its own ritual, a form of words often accompanied by actions; the object was to induce ecstasy in which communion with God was easier. Thus one had its ritual dance, in another the members ate live coals or gashed themselves with knives. A convent was usually a centre for teaching and was often a civilising influence and a lodging for travellers. The head of the Bek-tashi order girded the sultan of Turkey at his accession with the sword of Othman, and the Senussi was a political force which gave a king to Libya. There were also D.s who were not attached to any order, and led a wandering life, begging their way, often addicted to drugs. See O. Dupont and X. Copolani, *Les Confréries religieuses musulmanes*, 1897; J. K. Birge, *The Bektashi Order of Derrishes*, 1937.

Derwent: 1. Riv. of Cumberland, England, rising near Bow Fell and Scafell, and flowing N. and N.E. to D. Water and Bassenthwaite, then W. through a narrow valley past Cockermouth to the Solway Firth near Workington, a total length of 34 m. The water is wonderfully clear, but the D. is not navigable.

2. Riv. of Derbyshire, England, rises in Bleaklow Hill, N. of the Peak, and flowing through a narrow valley, where it receives the Noe and Wye, flows S. past Chatsworth, Matlock, and Belper into a low plain S. of Derby. From here it flows S.E. in a very winding course, to join the Trent near Sawley, on the Leicestershire border, a total distance of about 60 m. The riv. is not navigable except for pleasure boats in certain reaches near Matlock.

3. Trib. of the R. Tyne, England, 30 m. long, forming for part of its course the boundary between Northumberland and co. Durham.

4. Riv. of Yorks, England, rising on the Yorks moors, and flowing 57 m. S. through Malton to join the Ouse between Selby and Goole.

Derwent Water, lake in the SW. of Cumberland, England, 238 ft above sea level, stretching for 3 m. to the S. of Keswick; greatest breadth 1 m., depth never exceeding 72 ft. Overlooked by Castle Head (530 ft), it is noted for its wild beauty, and especially for the Floating Isle and the Lodore Falls near its head. Brandelhow, on the W. side, bought by public subscription in 1902, was the first National Trust property in the Lake Dist. The Ruskin memorial on Friar's Crag was handed over to the trust in 1900.

Derwentwater, James Radcliffe, or **Radclyffe**, Earl of (1689–1716), a leader in the Jacobite rebellion of 1715, was captured and confined to the Tower of London after the rout at Preston. His youth,

courtesy, bravery, and rank, the efforts of his friends, and his own appeal for the king's mercy were powerless to stay his execution in 1716 on Tower Hill. *See* life by F. J. A. Skeet, 1929.

Derzhavin, Gavril Romanovich (1743-1816), Russian poet; he was minister of justice, 1802-5. His poetry is the highest achievement in Russia of the Classicist school and is marked by sublimity and vigour of thought and expression. His most famous work is the philosophical ode *God*.

Desaguadero: 1. Riv. of Peru and Bolivia, since 1904 part of the boundary of Bolivia. It drains (as the name implies) Lake Titicaca, and flows SE. for some 200 m. with gradually lessening volume to Lake Poopo. It gives its name to the valley dist. of the Andes, through which it flows. It is navigable for small craft.

2. Riv. in the W. of the Argentine; *see* SALADO, 2.

Desaix de Veygoux, *see* VEYGOUX.

Desart, Sir Hamilton John Agmonde-sham Cuffe, 5th Earl of and 7th Baron, also Viscount Castle Cuffe, of Desart, co. Kilkenny (1848-1934), 2nd son of 3rd earl. He was called to the Bar, 1872; solicitor to the Treasury and queen's (and king's) proctor, 1894-1909; director of public prosecutions, 1894-1908. Succeeded to peerage, 1898. During his tenure of office he undertook the prosecutions in the following *causes célèbres*: Jameson Raid case; Jabez Balfour, of Liberator fraud notoriety; the Maybrick murder case; the moat farm murder; the trial of Neil Cream; and the Lord Russell bigamy case in the House of Lords.

Desaugiers, Marc Antoine Madeleine (1772-1827), Fr. dramatist and songwriter, *b. Fréjus*; he fled from the terrors of the revolution to San Domingo, where, during the great Negro rebellion, he was captured and almost lost his life. On his return to France in 1797 a storm of popular applause at once greeted his operas and comedies, which were produced in rapid succession at the Théâtre des Variétés and the Vaudeville. A higher literary merit belongs to some of his drinking songs and lampoons, which he sang himself with considerable *éclat* in many Parisian salons. At his death he was manager of the Vaudeville.

Desbarres, Joseph Frederick Wallat (1722-1824), engineer, *b. in* England of Huguenot parents. During the siege of Quebec he served as aide-de-camp to Gen. Wolfe. The engineering operations during the conquest of Canada which followed were under his charge, whilst from 1763 to 1773 he surveyed the shores of Nova Scotia. He became lieutenant-governor first of Cape Breton (1784-1804), and afterwards of Prince Edward Is. (1805-13).

Desborough, John (1608-80), soldier and statesman, *b. Eltisley, Cambs.* In 1636 he married Jane, sister of Oliver Cromwell, on whose side he fought gallantly during the Civil war. He opposed Cromwell's assumption of quasi-royal powers, however, although he himself sat in Crom-

well's House of Lords, and after the protector's death he became a strong partisan of Fleetwood. In 1660 and 1666 he was imprisoned in the Tower for alleged intrigues against Charles II. Butler satirised him in *Hudibras* and the *Parable of the Lion and Fox*.

Desborough of Taplow, 1st Baron, *see* GRENFELL, WILLIAM HENRY.

Descartes, René (Latinised as *Renatus Cartesius*) (1596-1650), Fr. philosopher, *b. La Haye, Touraine*, and educ. at the Jesuit school of La Flèche. In 1617 he went to Holland and entered the army of Prince Maurice of Orange. In 1619 he entered the service of Bavaria, and while in winter quarters at Neuberg on the Danube found time for the reflections which afterwards resulted in the *Discours de la méthode*. In 1625 he settled in Paris, but went to the Netherlands in 1629, and



RENÉ DESCARTES

Engraving from the painting by Franz Hals

lived there mainly until 1649. In 1650 he went to the court of Sweden at the invitation of Queen Christina, but he *d.* at Stockholm within a few months. In 1666 his body was removed to Paris, and in 1819 transferred to St Germain-des-Près. D. is generally considered the 'father of modern philosophy.' Even in his school-days he found it impossible to accept scholastic tradition and theological dogma as knowledge, and his first step towards evolving a philosophical system was to discard all books. In 1637 appeared the *Discours de la méthode*, in which he traces his mental development from his earliest years to the point when he refused to believe anything unless it were supported by incontrovertible and absolute proof. Starting with doubt as the only sure test, he applied it to all that had hitherto passed as knowledge, and the only proposition which stood the test seemed the fact of his own existence. This he

formulated as 'Cogito: ergo sum,' clearly describing the relation between consciousness and existence. From this he next concluded that 'whatever is clearly and distinctly thought must be true,' whence he arrived at the idea of the existence of a Perfect Being, because from the intuition of our own imperfection we evolve the idea of perfection, and if the idea of perfection is certain, then perfection must exist. The cardinal point in the philosophy of D. is the essential difference between spirit and matter, between thinking and extending substances, into one of which classes all things fall, and which can in no way exert any influence upon each other or partake of each other's attributes. The principles of the *Discours de la méthode* are dealt with more fully in *Méditations de prima philosophia*, 1641, and *Principia philosophiae*, 1644. From philosophy he applied his principles to physics, and his celebrated theory of vortices, explaining the motions of the heavenly bodies, was only superseded by Newton's theory of gravitation. It was in mathematics that D. achieved the most lasting results; he first recognised the real meaning of the negative roots of equations and founded analytical geometry, the application of algebra to geometry. Besides his philosophical and mathematical treatises, D. was the author of *Traité des passions de l'âme*, 1649, for Queen Christina. See also CAMBRIDGE PLATONISTS; INNATE IDEAS. See J. Millet, *Descartes, sa vie, ses travaux, ses découvertes*, 1867-71; K. Fischer, *Descartes and his School* (Eng. trans.), 1887; *Descartes: his Life and Times*, and trans. of the chief works, by Elizabeth S. Haldane, 1905-11; *Cambridge Modern History*, vol. iv, 1906, 'Descartes and Cartesianism'; G. Milhaud, *Descartes, Savant*, 1921; C. von Brockdorff, *Descartes*, 1923; C. Adam and G. Milhaud, *Correspondance*, 1936-41; L. Brunschwig, *Descartes et Pascal*, 1945; and S. V. Keeling, *Descartes*, 1948.

Descent (from Norman-Fr. *discent*), see in heredity, DARWINISM; in law, INHERITANCE; in science, BIOLOGY.

Deschamps, Eustache (c. 1338-1415), Fr. poet, b. Vertos in Champagne. One of the victims of the siege of Rheims, he cherished to his death a bitter hatred of the Eng. nation. Besides serving in the Flem. wars he is said to have suffered imprisonment by the Saracens, and to have wandered through Syria and Egypt, Italy and Hungary. In 1360 he became vassal to Princess Isabella, and for some time he was *huissier d'armes* to King Charles V. Indeed, the list of honourable offices he held under nearly all contemporary princes attests his great popularity. The numerous *virolays*, satires, ballades, rondeaux, and farces of this roi de Laidure, as he styled himself, which were unprinted till 1832, justify his claim to be recognised as the first lyric poet to write in modern Fr. His one epic poem was entitled *Miroir de Mariage*, and he wrote an *Art of Poetry* in prose, 1392. His complete works were pub. by Q. de Saint-Hilaire and G. Raynaud in 11 vols., 1878-1903. See E. Hoepfner, *E. Deschamps, Leben und Werke*, 1904.

Deschanel, Émile Auguste Étienne Martin (1819-1904), Fr. man of letters, b. Paris, was appointed to the professorship of rhetoric at Paris. He was obliged to leave France because of the vehemence with which he preached republican doctrines in his *Catholicisme et Socialisme*, 1850. But in 1881 he was elected to the chair of modern languages in the Collège de France. Most of his publs., e.g. *Les Courtisanes Grecques*, 1854, *Études sur Aristophanes*, 1867, and *Le Romantisme des classiques*, 1882, deal with the literature of the ancients. Hisson, Paul Eugène Louis (1856-1922), was president of the Fr. rep. in 1920.

Deschutes, riv. of U.S.A., rising on E. side of the Cascade Mts. Its course is chiefly NNE., and its length is about 240 m. It flows through a volcano dist., dividing Wasco co., and finally enters the Columbia R. It is used for power and irrigation.

Deseronto, small tn of Ontario, Canada, situated on the bay of Quinté, in Hastings co., about 30 m. SW. of Kingston. Has trade in lumbering and fruit growing. Pop. 1645.

Desert (Lat. *desertum*, from *deserere*, to abandon), geographical term for a barren and uninhabited dist. of large extent. The term may be used to include the Tundras or frozen plains fringing the Arctic regions, the great ice-wastes of the Arctic and Antarctic continents, and sometimes the temporary wastes or steppes which are covered with vegetation only for a few months in the spring. The name is more usually restricted, however, to the hot, dry dists. of the low latitudes, where the temps. are extreme, the rainfall very scanty, and evaporation very rapid. These hot D.s occur in 2 belts encircling the earth; in the N. hemisphere there stretch the great Sahara, Libyan, and Nubian D.s, the D.s of Arabia, Persia, Turkestan, and Gobi, which continue in the great basin of N. America. The S. ring, less extensive and more broken, includes the Kalahari D. in Africa, the interior of Australia, and the Atacama D. in S. America. The essential characteristic of a D. is its lack of rain and the scarcity both of moisture on its surface and of watery vapour in the atmosphere which might decrease the excessive radiation. The temps. are extreme, ranging from 120° F. in the daytime, with the sand itself at a temp. of 150° F., to below freezing-point at night. D.s occur at all altitudes, from below sea level to sev. thousand ft. above it, and may be of a flat appearance broken only by driving waves of sand, and bounded by the sharp circle of the horizon, or a rocky plateau, hollowed and cut into valleys and ravines. Cloud-bursts provide the greater part of the scanty rainfall, and sandstorms of terrific force and velocity are of frequent occurrence. The mirage (q.v.) is a peculiar feature of great D.s, and is largely the cause of the tales of genii and evil spirits prevalent among D. peoples. Absolute lack of vegetation is rare, but the plants grow very scantily, and are specially adapted to D. conditions, being mainly of

the spinifex family and the prickly variety of the cactus, whose glazed surface retains such moisture as it obtains from the soil. Animal life is similarly restricted, the camel being the only beast of burden able to withstand D. conditions. Where natural springs are found the surrounding land becomes a marvel of fertility, and an oasis (q.v.) settlement grows up, while the rivs., such as the Nile, are used for the irrigation of wide tracts, and the sinking of artesian wells is frequently practised in the Sahara. See also Gobi; KALAHARI; SAHARA. See A. McInerny, *Deserts and the Birth of Civilisation*, 1932, and *The Role of the Deserts*, 1934; P. B. Sears, *Desert on the March*, 1935; J. Harris, *Soil of Desert Vegetation*, 1936; and R. A. Bagnold, *The Physics of Blown Sand and Desert Dunes*, 1941.

Desertion may be defined as intentional abandonment of a post or obligation to which the offender is bound by legal or moral laws: (1) D. in the armed forces is being absent without leave when there is no intention to return, as distinguished from absence without leave from other causes. The practice of deserting from one regiment to another to avoid foreign service or aiding the civil power is designated fraudulent enlistment, as distinguished from D. D. when on active service is punishable with death in all European countries. All who attempt to induce D., or who harbour deserters, are liable to punishment. When D. occurs at other times it is punished with imprisonment for the first offence, and a term of penal servitude, to be determined by the president of the court martial, for all subsequent offences. All deserters must be tried by court martial, and when convicted forfeit all prior service and any advantages accrued to them from such service, as well as being liable to serve again for the full term of the forfeited service. (2) D. from the merchant service is punishable with forfeiture of pay, and as directed by the Merchant Shipping Act, 1894. (3) D. of wife or children. A deserted wife, by the law of England, may take proceedings against her husband for a maintenance order if she becomes chargeable to the par. He may be charged as a rogue and vagabond under the Vagrancy Act, 1824. D. without cause for at least 3 years is a ground for a petition of divorce by husband or wife; and, similarly, either spouse may present a petition for judicial separation. The Summary Jurisdiction (Married Women) Act of 1895 gives a deserted wife the custody of any children up to the age of 16, and provides that the husband shall pay a weekly sum towards their maintenance. In such circumstances the wife may obtain an order to protect such property as she may herself acquire, or already possesses in her own right. In Scotland D. without sufficient cause for 4 years is ground for a decree of divorce. See DIVORCE; HUSBAND AND WIFE.

Desforges, Pierre Jean-Baptiste Choudard (1746-1806), Fr. playwright. At first an actor in the Comédie Italienne, he later joined a company of wandering players.

for whom he wrote and adapted plays. He married an actress, and both spent 3 years at St Petersburg. On his return he produced *Tom Jones à Londres* at the Comédie Italienne, 1782, an adaptation of Fielding's novel. His *Jocande*, 1790, was written for the music of Louis Jadin. But his greatest success was the comedy *L'Épreuve villageoise*, 1785, the music for which was composed by Grétry.

Deshoulières, Madame Antoinette Du Ligier de la Garde (1638-94), Fr. poetess, b. Paris. She was considered by Voltaire to be the best of the women poets of France. She was a prominent figure for her beauty and wit at the court of Louis XIV, and was the centre of a circle of the most eminent literary men of her time. She wrote odes, ballades, madrigals, and idylls, of which only a few of the last have lived. Complete eds. of her works were pub. in 1695 and 1799. See C. A. Sainte-Beuve, *Portraits de femmes*, 1892.

Desiccation, the process of drying or removing water from a substance. This may be done by heating the substance and causing evaporation of the moisture, or by various chemical agents, such as calcium chloride, sulphuric acid, potassium hydrate, which are applied by means of a desiccator. This is a closed vessel in which the substance to be dried is placed in one part, with the hygroscopic substance which is to dry it in a separate adjacent part. Vacuum D. is a quicker process, and is caused by exhausting the air from the desiccator. Currents of dry air also act as desiccators. Certain organisms have the power of undergoing the process of D. and retaining sufficient latent life to enable them to recover, but the longer the period of D. has been, the longer they take to recover; nematodes, or 'paste-cels,' have been known to revive after nearly 20 years. Rotifers (q.v.) are said to recover after a long period of D., but it is generally considered that it is only the eggs which survive, and that the fully developed organism is really dead. Bear-animacules, or tardigrades, are also said to survive. Among plants, seeds and spores seem able to resist any period of D.

Design (Lat. *designare*, to mark out), in the fine arts, is the drawing or plan which is to act as a guide to the finished representation; the arrangement of the details which are to go to make the whole not only with regard to their artistic completeness, but also with regard to their appropriateness and general utility in the position which they are designed to occupy and the materials from which they are to be constructed. D. does not necessarily mean originality or novelty; more frequently it is the development of old ideas to suit new conditions. In some arts, such as pottery and silver or goldsmiths' work, the form and material are an essential part of the D.; in such arts it is necessary, therefore, that the designer should know the processes, the qualities of the materials, and the practical use of the requisite tools, so that he is not only a designer but also a practical craftsman. The keen competition for export markets

after the Second World War has increased the importance of industrial design (q.v.).

Design, in law, see COPYRIGHT and TRADE MARKS.

Design, Schools of. The first school of design was opened under the auspices of the Council of the Gov. School of Design at Somerset House in 1837. On the re-organisation of the schools in 1852 the 3 main objects in view were: (1) the promotion of elementary knowledge of drawing and modelling; (2) special instruction in the knowledge and practice of ornamental art; and (3) the practical application of such knowledge to the improvement of manufs. In 1857 the central or national art training schools were removed to S. Kensington, where they have since remained. Similar S. of D. grew up in the large prov. tns. Thus as early as 1840 state grants were given to Manchester, Birmingham, Glasgow, etc., to assist them in the erection of such schools. Later new technical schools were estab. throughout the country, where enamelling, metal repoussé, wood-carving, and other artistic handicrafts were taught, as well as drawing and the laws of ornament. Since the Education Act of 1902 the art schools in most tns have been taken out of the hands of private committees, and are now managed by the municipalities with moneys derived from the local rates. The Central School of Arts and Crafts in Southampton Row (estab. by the L.C.C. in 1896) and the Leicester School of Art may be taken as types of the modern estab. where art is taught in strict relation to industrial requirements. See also INDUSTRIAL DESIGN; SCHOOLS OF ART.

Desio, lt. tn. in Lombardy (q.v.), 8 m. N. of Milan (q.v.). It has a silk industry, and was the bp. of Pope Pius XI (q.v.).

Désirade, is. of Fr. W. Indies, 4 m. E. of Guadeloupe, area 10 sq. m. Fishing is the chief industry and some sugar is grown. D. was the first is. discovered by Columbus on his second journey (1493). Pop. 1600.

Desire is used in psychology of all instances where the subject is stirred to action not by percepts— that is, by signs of the presence of the objects of pleasure—but rather by imagination or ideas. D. in man corresponds to appetite in animals, and may be defined, according to Spinoza, as 'appetite with the consciousness of it.' In ordinary speech it is customary to speak of the D. of tangible things as also of the D. of abstractions, such as wealth or truth. Intensity of D. depends on the force of the impulse to action, and not on the degree of pleasure which is expected to follow the fulfilment of that D.

Deslys, Gaby (c. 1884-1920), Fr. music-hall comedienne and dancer, was well known in Paris before her first appearance in London— viz. at the Gaiety Theatre, Sept. 1906. 'Till 1917 she was a great favourite with the London public, alike for her personal beauty and for her dazzling costumes. She also took part in light opera and farce. She d. in Paris leaving a life interest in her fortune of £400,000 to her mother and sister; after

their deaths it was to go to the poor of Marseilles.

Desmids (Gk *desmos*, bond) constitute a large genus of fresh-water algae which bear considerable resemblance to diatoms, but differ from them in being bright green in colour and having the cell-wall composed of cellulose instead of silica.

Des Moines: 1. Riv. of Minnesota and Iowa, U.S.A. Rising in the SW. of Minnesota, it traverses Iowa with a southeasterly course, and joins the Mississippi at Keokuk. Near its mouth it marks the Missouri state line. Length 535 m.

2. City, cap. of Iowa, U.S.A., on the Des Moines R. in the 'corn belt' and a coal-mining area, 300 m. W. of Chicago. It is a centre of commerce, insurance, printing and publishing, and meat packing, and manufs. farm machinery, aeroplane parts, foundry products, flour, and clothing. It has had a city manager since 1950, and is the seat of Drake Univ., the Cumming School of Art, and Des Moines Still College of Osteopathy and Surgery. Other points of interest: state capitol, civic centre, art centre, Drake-Des Moines Symphony Orchestra, state fair grounds. Pop. 173,000.

Desmond, Earls of, Irish family who exercised considerable influence over the SW. of Ireland. Beginning with Maurice Fitzgerald (d. 1356), the line came to an end in Gerald Fitzgerald, the 15th earl, who was murdered in his retreat among the Kerry Mts, 1583, his place of hiding having been betrayed to the Eng. He had sacked Youghal and murdered the inhab. as a direct challenge to Elizabeth's Gov. Consequently he was proclaimed a traitor, and spent the last 2 years of his life as an outlaw.

Desmoulins, Camille (1760-91), Fr. revolutionary and journalist, b. Guise, Aisne, first became well-known after his harangue to the mob on 12 July 1789. 'To arms!' he cried; 'this dismissal (i.e. that of Necker) is the toxin of the St Bartholomew of the patriots.' It was the beginning of the Fr. Revolution; 2 days afterwards the Bastille fell. Nevertheless a permanent stammer drove D. to write down all his inflammatory speeches. His pamphlets entitled *La Philosophie du peuple français*, 1788, *La France libre*, 1789, and the series that subsequently appeared in *Les Révolutions de France et de Brabant*, 1789-91, contain extremist revolutionary doctrines. Associated first with Mirabeau, and on his death with Danton, D. was partly responsible for the downfall and ruthless massacres of the Girondists. Later, however, with Danton, D. advocated a moderation of the Terror. Robespierre considered that D. had held him up to ridicule in his newspaper, *Le Vieux Cordelier*, and, with Danton, D. was guillotined, 5 April 1794. A few days later his young wife was also guillotined. See lives by R. Arnaud, 1928, and P. Compton, 1933.

Desna, navigable left trib. of the R. Dnieper in Russia. It rises near Smolensk and joins the Dnieper near Kiev. It is chiefly used for floating timber. Length 740 m.

Desor, Pierre Jean Edouard (1811-82), Swiss geologist and palaeontologist. Pub. papers on Echinoderms, anct. lake habitations, and on desert conditions. Pub. *Aus Scherra*, 1865.

De Soto, Fernando, see SOTO.

Despard, Mrs Charlotte French (1844-1939), one of the prin. leaders of the women's suffrage movement. Much influenced by Shelley. Twice imprisoned. She laboured as a poor law guardian and a Socialist orator, and was well known among the poor of Dublin. Though a sister to the first Earl Ypres, she was an extreme pacifist during the First World War. In 1919 she stood for Parliament at Battersea. Afterwards she went to live in Dublin, where her support of Mr de Valera, both before the treaty of 1922 and in the ensuing civil war, brought her into conflict with the authorities. In 1926, at the age of 82, Mrs D. marched from the Embankment to Hyde Park in a procession of women representing the various professions to demand equality of franchise; and with the royal assent to the Bill in 1928 she saw her greatest ambition realised.

Despard, Edward Marcus (1751-1803), Irish conspirator, who spent 18 years in military service in the W. Indies and later as superintendent of Yucatan. Recalled on trivial charges and found innocent even of these (1792), he was notwithstanding imprisoned for 2 years. He was finally beheaded because of his share in a plot to assassinate the king.

Despencer, Baron Le, see DASHWOOD.

D'Espercy, see FRANCHET D'ESPEREY.

Des Périers, Bonaventure (c. 1510-44), Fr. writer, b. Arnay-le-Duc, Burgundy. In 1536 he became the secretary of Margaret, queen of Navarre. His *Cymbalum mundi*, 1537, is a book of 4 dialogues, satirising Christianity. The work was in parts very daring, and the outcry which ensued caused the queen to withdraw her patronage. In 1544 Des P. committed suicide. The work upon which his fame principally rests is his *Nouvelles recreations et joueur deris* (pub. posthumously in 1558), a collection of short stories, often crude but always amusing, told in a natural and lively style. The *Œuvres françois de Des Périers* were ed. by L. Lacour (2 vols.), 1856. See P. A. Becker, *B. Des Périers*, 1924; H. Just, *La Pensée secrète de B. Des Périers et le sens du 'Cymbalum mundi'*, 1948.

Des Plaines, residential city in NE. Illinois, U.S.A., in a truck-farming area, manufacturing sprinklers, fertilisers, greenhouses. Limestone is quarried. It is the seat of Elmhurst College. Pop. 21,300.

Despotism, the oppressive and sometimes illegal rule of one man; the reverse of democracy. The name, like tyrant, is of Gk origin and had nothing of its present significance. The title despot was given to the master of a household of slaves; then to the absolute ruler of E. countries with whom the Gks came in contact. Later it came to be an honorary title given to princes in the Byzantine empire, and it is still employed in something of its

old sense as a mode of addressing a bishop in the Gk Church. The beginning of its present use was the employment, as in the case of tyrant, of the word to describe a ruler who had no right to be the ruler although his gov. may have been beneficial. See INDIVIDUALISM.

Despoto Dagh, see RHODOPE MOUNTAINS.

Despréaux, N., see BOILEAU-DESPRÉAUX.

Desquamation, shedding of the epithelium or surface skin. It occurs commonly after certain skin diseases and erythematous rashes, notably that of scarlet fever.

Desssalines, Jean Jacques (1758-1806), Negro emperor, b. in Guinca, Africa, and carried to Haiti as a slave. In the insurrection of 1791 he assumed the name of his master, a Fr. planter, and fought as a lieutenant under Toussaint l'Ouverture. After submitting to France he was made governor of the S. part of the is., but began the war anew, defeated the Fr. at the battle of St. Marc, and after unspeakable cruelties drove them from the is., 1803. Haiti declared itself independent in 1804, and D. was elected governor, and in the following year emperor under the title of Jean Jacques I. His tyranny and cruelty soon alienated his supporters, and in 1806, while trying to suppress a revolt, he was murdered by Pétion and Christophe, the latter of whom succeeded him.

Dessau, Ger. city in the dist. of Halle, on the Mulde near its confluence with the Elbe, 27 m. NNE. of Halle (q.v.). It was formerly cap. of Anhalt (q.v.). It is a finely laid-out city, with interesting Baroque buildings, including the former ducal palace. It has manufs. of rolling-stock, textiles, chemicals, and iron goods. The city was heavily bombed during the Second World War, in consequence of the large aircraft factories in its neighbourhood. It was captured by the Amer. 1st Army on 21 April 1945. D. was the bp. of Moses Mendelssohn, Wilhelm Müller, and F. Max Müller (qq.v.). Pop. 90,000.

De Staël, Madame, see STAËL.

Desterro, see FLORIANOPOLIS.

Destouches, Philippe (1680-1754), Fr. dramatist, b. Tours. His real name was Néricault. In 1699 he became secretary to the Fr. ambas. in Switzerland, and wrote during that time *Le Curieux Impertinent*, 1710; *L'Ingrat*, 1712; *L'Irrésolu*, 1713; *Le Médisant*, 1715. From 1716 to 1722 he was secretary to the embassy in London. On his return to France he was elected to the Academy, 1723, and subsequently produced *Le Philosophe Marié*, 1727, and his masterpiece *Le Glorieux*, 1732, a picture of the struggle between the old nobility and the wealthy bourgeois. Like Molière, he wished to revive the comedy of character, but in style he rather followed Boileau-Despréaux; his later comedies were spoilt by his carrying the moralising tendency to extremes.

Destroyer, Torpedo Boat, small, fast, unarmoured warship heavily armed with torpedo tubes and guns up to 4.7 in. This class of vessel was developed to supersede the 'torpedo gunboat' or 'torpedo

catcher,' which in turn had been built to destroy torpedo boats. The destroyer acts in squadrons and her duties are to sink the destroyers of the enemy by gunfire, torpedo the larger enemy ships, protect her own battle fleet from torpedo attack, and set up smoke-screens. During the 1914-18 and 1939-45 wars destroyers were also used for escorting convoys of merchant shipping, combating the submarines by means of explosive depth-charges, and as minelayers. The first Brit. destroyer was built by Messrs. Yarrow in 1893 and named *Havock*. She was much lighter and smaller than the 'catchers' she was replacing, but had relatively great length with a low free-board and was equipped with high-speed engines capable of developing 3500 brake horse-power which enabled a speed of 26½ knots to be attained. The great advance in speed of this vessel and her sister ships over the existing torpedo boats was due mainly to the alteration in lines, small draught, high engine power, and reduction in weight brought about by using thinner plates—in some cases they were only ½ in. thick—and cutting out armour plating. Landmarks in the design of destroyers were the introduction of the water-tube boiler, replacement of reciprocating engines by steam-turbines, and the use of oil fuel instead of coal. Torpedo tubes used to be rigidly fixed in the bows, but as the speed of the torpedo was improved these had to be abolished because, after firing, the destroyer at first overran the torpedo, which soon gathered way and hit the parent ship behind. Partly owing to the big increase in the cost of ship-building since the end of World War II, the Royal Navy has, to some extent, replaced D.s by frigates, which are smaller and cheaper. In 1956 the Royal Navy had 68 D.s. about two-thirds of this number being in reserve. The main classes of D. are the Battles, Weapons and 'C's. D.s of the Battle class, which is one of the newer classes, are of 2315 or 2460 tons displacement. They were designed for service in the Pacific in the war against Japan, but hostilities ceased before any were completed. They have a speed of 36 knots, 4 or 5 4.5 guns, 8 or 9 40-mm. anti-aircraft guns, and 8 or 10 21-in. torpedo tubes. Many war-time D.s have been converted into fast anti-submarine frigates. A typical modern D. of the U.S. Navy is that of the 'Allen M. Sumner' class. Its dimensions are 376½ ft by 40½ ft with a displacement of 2200 tons and a speed of over 35 knots. Its armament includes 6 5-in. guns, many close-range anti-aircraft guns, and 5 21-in. torpedo tubes. Larger vessels are those of the 'Gearing' class which with similar armament have a length of 390½ ft and a displacement of 2400 tons. The squadron-leader is a kind of super-destroyer, being larger and more powerfully armed than the others, and acts as flagship to destroyer flotillas. The U.S. Navy has some guided missile D.s under construction. Russia was reported to have 150 D.s in 1954.

Destructors, furnaces employed for the

destruction of refuse. The disposal of refuse from towns has presented a problem to the authorities from time immemorial, but with the concentration of pop. reached in modern civilisations the matter became urgent. Such methods of disposal as dumping into the sea are clearly possible only in special circumstances, but the fact that much of the refuse consists of carbonaceous material (e.g. paper, straw, animal and vegetable remains, cinders, etc.) suggested the idea of destroying it by combustion. Destructor-furnaces are commonly erected in series, and, after the refuse has been collected, tins, cans, and pieces of iron are withdrawn magnetically, fine dust is removed, and the residue then fed into the furnaces. High temps. are necessary (about 2000°) for satisfactory destruction, and in some cases the heat evolved is used to produce steam. Destructors are comparatively expensive to construct and run, but the convenience and cleanliness are worth paying for. Many different types of destructors are in use, e.g. the Heenan type and the Horsfall and Sterling type. *See also* REFUSE, DISPOSAL OF.

Desuetude, technical word in Scottish law, denoting the revocation of some law, simply through disuse or the practice of some usage quite contrary to the terms of the law, which has received its sanction through a general consensus of opinion, and not through any legal enactment. Thus when a man was charged in 1887 with opening a pie and lemonade shop on Sunday he set up a plea of D. as regards the law of 1661 against Sabbath profanation. In this particular case the Act of 1661 was held not to have 'gone into D.' In Eng. jurisprudence, a statute never lapses 'by D.', but can become inoperative only by repeal.

Desvaux, Etienne Émile (1830-54), botanist and writer on Chilean grasses and sedges.

Desvres, Fr. tn in the dept of Pas-de-Calais, 10 m. ESE. of Boulogne. It has ironworks, tanneries, and potteries. Pop. 5500.

De Tabley, John Byrne Leicester Warren, Baron (1835-95), poet, b. Cheshire. He was educ. at Eton and Christ Church, Oxford. Between 1859 and 1865 he pub. 7 vols. of verse, remarkable for their grace and refinement of feeling, but his *Philoctetes*, 1866, which won the admiration of Gladstone and Browning, first gave full illustration of his fine classical culture. His careful drama entitled *The Soldier of Fortune*, 1876, met with a cold reception; a selection of *Poems Dramatic and Lyric*, 1893, proved that his poetical gifts had not been impaired by his life as a recluse. De T. was also an excellent amateur in botany and numismatics, and his work on the flora of Cheshire was pub. in 1899, with a memoir by Sir M. G. Duff.

Detachment, in its military sense, refers to a small body of infantry or armour dispatched from the main army, brigade, battalion, company, or whatever unit it may be, for the performance of some particular duty. In naval terminology the word is similarly used to denote the

dismissal from the fleet or squadron of 2 or more vessels on a special service. A 'gun detachment' means the number of artillery soldiers required to take care of a single gun.

Détaille, Jean-Baptiste Edouard (1848-1912), Fr. painter, b. Paris. He was a pupil of Meissonnier, his first picture exhibited in the Salon being 'A Corner of Meissonnier's Studio,' 1867. His finest pictures are undoubtedly his realistic paintings of military life, either of the scenes from contemporary wars, such as his 'En reconnaissance,' 1875, 'Le Régiment qui passe,' 1876, and his 'Salut aux blessés,' 1877, which represent episodes in the Franco-Prussian campaigns, or from the Napoleonic battles such as his 'Sortie de la garnison de Huningue en 1815,' and his representations of Napoleon in Egypt, 1878, and of the engagement between Cossacks and the Imperial Guard in 1814, 1870. His best-known portraits are of the Prince of Wales, Duke of Connaught, and Emperor of Russia, 1898, while 'Le Rêve,' 1888, and 'Les Victimes du devoir' are 2 of his most famous pictures. See G. Goetschy, *Les jeunes peintres militaires*, 1878.

Detective, see POLICE.

Detective Story. The D. S. proper begins with the tales of Edgar Allan Poe (q.v.), whose 'Murders in the Rue Morgue,' 'Mystery of Marie Rogêt' and 'Purloined Letter,' 1845, introduce the first fictional detective, Auguste Dupin. In France there had already appeared the *Mémoires*, 1829, of Eugène Vidocq, that extraordinary character who began as a thief and ended as a master-detective, and these were followed in 1866 by the novels of Émile Gaboriau, creator of the investigator M. Lecoq. The cult of the *roman policier* has never been so popular on the Continent as in Britain and America, though it produced Gaston Leroux's brilliant *Mystery of the Yellow Room*, 1908, and the innumerable psychological crime stories of the Belgian Georges Simenon. In England the tradition starts with *The Moonstone*, 1868, by Wilkie Collins, which a great critic once called the first, longest, and best of D. novels, though Collins's Sergeant Cuff had a predecessor of sorts in Inspector Bucket of Dickens's *Bleak House*. In 1886 there was pub. in Melbourne *The Mystery of a Hansom Cab* by Fergus Hume, which is said to have created an all-time record by selling half a million copies, but this early success is now forgotten.

It was in the next year, 1887, that the D. S. entered its classic period with the pub. of Conan Doyle's *Study in Scarlet*. This was a tentative effort, only half the book being given over to Sherlock Holmes's exploits and the rest being pure adventure. But after the pub. in the nineties of the series of short stories describing his cases, Sherlock Holmes attained immortality and his name became a household word as familiar as Hamlet or Romeo. In later years Holmes societies were formed; a Holmes literature was built up, solemnly reconstructing his life and attainments as

if he was a real person; there were a number of clever parodies, the most amusing being Maurice Leblanc's *Arsène Lupin versus Holmes*; and of course there were countless imitators. It may be doubted whether in their own line the Holmes series have ever been equalled; and it is an indirect proof of their supremacy that the D. fiction which followed tended to split into 2 distinct groups, each covering only a part of Conan Doyle's range. On the one hand there were the scientific investigators, who catalogued cigarette ends and wielded the microscope with all Holmes's attention to detail. Greatest of these was R. Austin Freeman, whose stories of Dr Thorndyke are said to have given some hints to Scotland Yard itself; and with him may be grouped the matter-of-fact Freeman Wills Crofts, creator of Inspector French, Philip Macdonald with his Colonel Gethryn, and John Dickson Carr, sometimes writing as Carter Dickson, who carried verisimilitude so far that he sometimes worked on actual historical incidents.

But the painstaking study of concrete clues was only one side of Sherlock Holmes's method. He also possessed a masterly insight into criminal psychology; and to develop this side of the D. S. an entirely different set of writers sprang up, the earliest being G. K. Chesterton, whose Father Brown reasons almost entirely from psychological evidence. His chief followers in this field have been women writers, of whom the most noteworthy is Agatha Christie, whose Belgian detective Hercule Poirot insists that the 'little grey cells' by which he analyses character and motive are far more important than the tracing and following up of tangible clues. The stressing of the psychological side gave a human interest to the crime story, which had tended more and more to become a mere intellectual puzzle, and in fact the psychological type shades off into the kind of novel in which the character-drawing is as important as the mystery. Such are the books of Margery Allingham and Ngaio Marsh, and the brilliant D. novels of Dorothy Sayers, whom some would place highest among the women writers. But Miss Sayers has a part also in another tradition, which was first estab. by E. C. Bentley. It was in 1913 that he pub. *Trent's Last Case*, which with its sequel is his only D. novel; the influence of this book was far-reaching, for it proved that a detective need not always behave with the grave self-importance typical of Holmes and his imitators. The 'judicious levity' once advocated by one of Stevenson's characters was passed on by Trent to Miss Sayers's Lord Peter Wimsey and to many others.

Parallel with the Brit. D. S. writers there have been many exponents of it in America. But there, curiously, the position of women writers is reversed. In Britain they entered the field late but came to eclipse the men in the psychological dept. In America they were prominent at the beginning but have now taken a back place. The work of Anna

Katherine Green (sometimes termed the mother of the D. story), of Mary Roberts Rinehart and Carolyn Wells now seems outlived and pedestrian. Among Amer. D. S. writers the great names (both pseudonyms) are S. S. Vau Dine, whose Philo Vance is among the most brilliant and sophisticated of investigators, and Ellery Queen, who is his own inspector and has compiled anthologies of D.S.s as well as editing a magazine devoted to them. Alongside these we may place Erle Stanley Gardner, whose versatile lawyer Perry Mason combines rapidity of action with Machiavellian legal manoeuvres. The tendency of later Amer. crime fiction has sometimes been to degenerate into mere accounts of gang warfare, of which it may fairly be said that too many crooks spoil the plot. The post-war cult of violence and brutality has had a debasing effect on the D. S. just as it has had on the cinema.

In addition to the regular writers of D. fiction there are many authors who have made this a sideline of their regular work. Edgar Wallace, for example, who was in the main a writer of adventure stories, created a most lifelike detective in his J. G. Reeder; A. E. W. Mason's Hanaud can hold his own with the best investigators; and along with these we may place some of the mystery stories of John Buchan and Baroness Orczy. But the spy story falls properly into a different class, as do tales of gentleman burglars like Raffles or 'the Saint,' which have their place under the heading PICARESQUE NOVEL. D. S. writing has also formed the relaxation of a number of distinguished scholars, such as Cecil Day Lewis, the Oxford prof. of poetry, who writes under the pseudonym Nicholas Blake, and Mgr Ronald Knox. What may be termed the highbrow cult of the D. S. has been responsible for the formulation of an elaborate set of rules which are sometimes claimed to govern its composition, and which are as rigid and unnecessary as the dramatic unities so unjustly fathered on Aristotle. See Howard Haycraft, *Murder for Pleasure*, 1942; E. Queen, *Queen's Quorum*, 1953.

Detergent. Synthetic D.s are substances used as an alternative to soap for cleansing operations. Many of them are sulphated or sulphonated substances produced as a by-product in petroleum refining.

The efficiency and behaviour of D.s are influenced by their structures, the nature of the material to be cleaned, the nature of the dirt, the temp. of the cleansing operation, and the pH of the solution. Hence each D. will achieve its optimum efficiency under various conditions.

D.s may be classified as anionic, e.g. Gardinols and Lissapols, cationic, e.g. Sapamines, and non-ionic, e.g. the Igepals, according to the nature of the surface active ions on ionisation. Generally they contain hydrocarbon groups which are water repellent or hydrophobic and responsible for the surface activity of the D., as well as one or more water soluble or hydrophilic groups.

The action of D.s is complex but involves a lowering of the surface tension at the interface between the water and the material to be cleaned, the hydrophobic groups lying on this interface. These water repellent groups then dissolve the dirt, keep it in suspension, and bring with them the hydrophilic groups which dissolve in the water and allow the surface of the dirty material to become completely wet so that the water can penetrate the material if it is porous. Thus a D. acts as a bridge between the solid material and the water. Its concentration must be adequate to retain the dirt in suspension or redeposition of the dirt will occur.

D.s should have a high D. value and should be stable in hard water, thus being able to disperse the well-known 'scum' produced when ordinary soap is used. They should be stable to acids, alkalis, and inorganic salts, i.e. able to clean in various media, and should possess free rinsing properties to avoid possible absorption through the skin or being with food through the leaving of small quantities on crockery after washing up.

One disadvantage of soap for cleansing purposes is the formation of scum in hard water, as both calcium and magnesium soaps are insoluble, these being formed by the interaction of the carboxyl groups in soap with the Ca and Mg salts in the hard water. Synthetic D.s having no carboxyl group would thus appear to be the solution to this problem of scum formation, but the survival of soaps for cleansing purposes offers some evidence of the intrinsic value of the carboxyl group despite many attempts to block it or change it. See also BLEACHING; SOAP.

Determinants, in mathematics, a system of symbols whereby many calculations are facilitated. Consider 2 homogeneous linear equations, $a_1x + b_1y = 0$; $a_2x + b_2y = 0$. By multiplying the first by b_2 and the second by b_1 , and subtracting, we get $x(a_1b_2 - a_2b_1) = 0$, whence $a_1b_2 - a_2b_1 = 0$. This may be written $\begin{vmatrix} a_1 & a_2 \\ b_1 & b_2 \end{vmatrix} = 0$, and the expression on the left is called a D. of the second order, consisting of 2 rows and 2 columns. The value is not altered by changing rows into columns or vice versa, thus $\begin{vmatrix} a_1 & b_1 \\ a_2 & b_2 \end{vmatrix} = a_1b_2 - a_2b_1$.

Interchanging 2 rows or columns changes the sign; thus $\begin{vmatrix} a_2 & a_1 \\ b_2 & b_1 \end{vmatrix} = a_2b_1 - a_1b_2$. Consider 3 homogeneous linear equations, $a_1x + b_1y + c_1z = 0$; $a_2x + b_2y + c_2z = 0$; $a_3x + b_3y + c_3z = 0$. From the second and third we get by the rule of cross-multiplication

$$\frac{x}{b_2c_3 - b_3c_2} = \frac{y}{c_2a_3 - c_3a_2} = \frac{z}{a_2b_3 - a_3b_2}. \text{ Substituting the proportional quantities for } x, y, \text{ and } z \text{ in the first equation, we get } a_1(b_2c_3 - b_3c_2) + b_1(c_2a_3 - c_3a_2) + c_1(a_2b_3 - a_3b_2) = 0, \text{ or}$$

$$a_1 \begin{vmatrix} b_2 & c_2 \\ b_3 & c_3 \end{vmatrix} + b_1 \begin{vmatrix} c_2 & a_2 \\ c_3 & a_3 \end{vmatrix} + c_1 \begin{vmatrix} a_2 & b_2 \\ a_3 & b_3 \end{vmatrix} = 0.$$

This may be written $\begin{vmatrix} a_1 & b_1 & c_1 \\ a_2 & b_2 & c_2 \\ a_3 & b_3 & c_3 \end{vmatrix} = 0$ and the expression on the left is known as a

D. of the third order, consisting of 3 rows and 3 columns. It is to be noted that the coefficient of a , b , or c , is the D. of the second order obtained by omitting the row and the column containing that constituent in the D. of the third order. Some of the properties of D. are: if 2 adjacent columns or rows are interchanged, the sign of the D. is changed without other alteration in value; if 2 rows or columns are identical the D. = 0; if each constituent in a row or column is multiplied by the same factor, the D. is multiplied by that factor. See T. Muir, *The Theory of Determinants in the Historical Order of Development*, 1923, and *Contributions to the History of Determinants*, 1930.

Determinism (from Lat. *determinare*, to prescribe), name applied to the doctrine that man's every action is directly dependent either on his environment or on his impulses and motives, the dependence being so mathematical that his behaviour could in every case be predicted were it possible to appreciate the exact nature and relative force of the external and internal impulses which drive him to behave as he does. It is therefore a doctrine in direct opposition to the doctrine of Free Will, taught in Christian theology, and known to psychologists under the names of Indeterminism, Voluntarism, and Indifferentism, by which it is held that man has complete moral freedom to choose between different courses of action. 'Hard' D. bears a very close resemblance to necessitarianism, and the old fatalistic beliefs, whilst 'soft' D. accounts for 'remorse' by allowing that in some cases it is really open to a man to make a deliberate choice. The theory of evolution, by which man is regarded as a mere link in the 'chain of causal development,' owing his motives, appetites, and aversions and indeed his whole mental outlook largely to inherited tendency and environment, lends support to the determinists.

Detinue, a term in law for the action brought for the recovery of goods, or their value, with damages for detaining them if they cannot be recovered, by the real owner of the goods against whoever is in actual possession of the same.

Detmold, Ger. tn in the Land of N. Rhine-Westphalia (q.v.), on the Werre, 102 m. ENE. of Düsseldorf (q.v.). It was formerly the cap. of Lippe (q.v.). It is a beautiful tn with a Renaissance castle, an 18th cent. palace (now an academy of music), and a fine medieval church. On the Grotenburg, in the Teutoburger Wald (q.v.), 3 m. SW. of the tn stands a huge copper statue (90 ft high on a 90 ft high plinth) of Arminius (q.v.). D. is a tourist centre and has a furniture industry. Grabbe and Freiligrath were natives of the tn. Pop. 32,000.

De Tocqueville, see TOCQUEVILLE.

Detonator, small supply of an easily exploded substance used to discharge the main explosive constituent of a cartridge, shell, or mine. A substance formerly in general use for this purpose is mercury fulminate, which in Brit. service am-

munition was mixed with potassium chlorate and antimony sulphide. The fulminate when exploded produces gases at a high temperature and pressure, conditions under which dynamite and other comparatively inert explosives are effectively discharged. Mercury fulminate has now been partly superseded by such improved detonators as lead azide, PbN₂. The term D. is also applied to the small metal cases fixed on railway lines to serve as fog-signals. See also EXPLOSIVES; SIGNALS.

Detritus, a geological term denoting gravel, sand, or other water-worn matter, and angular or subangular débris, which have accumulated in consequence of the disintegration of rocks.

Detroit, 5th largest city in the U.S.A., is in Michigan, 486 m. W. of New York in an air line and 247 m. E. of Chicago, on the Detroit R. 18 m. above Lake Erie and 60 m. from Lake Huron. It fronts 11 m. on the riv. and has an area of 140 sq. m., surrounding the 2 independent cities of Hamtramck and Highland Park. A bridge and 2 tunnels connect D. with Windsor, Ontario, across the riv. Among the chief buildings are St Paul's Cathedral, Blessed Sacrament Cathedral, the city hall, D. Public Library, D. Institute of Arts, the Penobscot Building, and the Guardian Building. D. carries on an enormous commercial traffic by railway, water, and air. A Fr. fur-trader estab. it as a trading post in 1701. In 1760 it was taken by the Brit., who held it as a military post until 1796. D. has been the centre of the motor-car industry since its earliest days. Other important industries are pharmaceuticals and chemicals, varnish, oil refining, shipbuilding, aircraft, railway cars, rubber products, steel, aluminium, adding machines, and electrical and television equipment. Educational and other institutions include Wayne Univ., the univ. of D., Lawrence Institute of Technology, D. Institute of Technology, D. Symphony Orchestra. The pop. was 285,700 in 1900, 465,800 in 1910, 693,700 in 1920, and 1,849,600 in 1950. See G. D. Catlin, *The Story of Detroit*, 1923; W. A. Simonds, *Henry Ford and Greenfield Village*, 1938; F. Barcus, *All Around Detroit*, 1939.

Detroit, University of, at Detroit, Michigan, a Jesuit co-educational institution of higher education, opened in 1877 as Detroit College and reorganised in 1911 as U. of D. It has colleges of arts and sciences, engineering, and commerce and finance, a graduate school, and schools of law and dentistry. The univ. library contained 168,000 vols. in 1956. With a teaching staff of 527 in 1955 there were 8600 students.

Detakoye, Selo, see PUSHKIN.

Dettingen, Ger. vil. in the Land of Bavaria (q.v.), 8 m. NW. of Aschaffenburg (q.v.). In a battle here in 1743 the Brit., Ger., and Austrian forces under George II (q.v.) defeated the Fr. under the Duc de Noailles (q.v.); this was the last battle in which an Eng. monarch took part.

Deucalion, in Gk mythology, son of Prometheus. When Zeus determined to

destroy mankind on account of its wickedness. D. and his wife Pyrrha were exempted from the universal doom. D. built a boat which, after floating for 9 days, rested on the summit of Parnassus. On asking the oracle of Themis what they were to do next, they were ordered to throw stones behind them. Those of D. became men, and those of Pyrrha women. See Ovid, *Metam.* 1.

Deûle, riv. in the depts Pas-de-Calais and Nord, France. It is a trib. of the Lys, which itself unites with the Scheldt in Belgium. Rising near Carency, it flows past Lille, where it once filled the moat of the pentagonal citadel, and Quesnoy, joining the main riv. near Deulemont.

Deûle, mrrkt tn in the prov. of E. Flanders, Belgium, 7 m. S.W. of Ghent. It is the centre of the picturesque dist. of the lower Lys, with splendid landscapes and pastures, and has an historic castle in Renaissance style. Pop. 1300.

Deus Nogueira Ramos, João de (1830-1896), Portuguese poet who probably appeals to a greater number of his countrymen than any other native poet with the exception of Camoëns and Garrett. But for his ardent admirers none of his poems would have reached the public, for he was indifferent to fame and a careless, spasmodic composer. Posterity will treasure his spontaneous and emotional lyrical outpourings such as his *Rachel*, *Marina*, *Descalça*, *Vida*, and above all his exquisite *Flores do Campo*, 1869. The *Campo de Flores*, 1893, is the best ed. of his poems. By turns D.'s writing is imitative, idyllic, pessimistic, and devout; it is notable for its intense purity and elemental simplicity. He is also the author of a reading method (*Cartilha Maternal*, 1876) which was officially approved in the schools.

Deuteronomy, the 5th book of the Pentateuch, which from the 17th cent. onwards was one of the great battlegrounds of biblical criticism. Before that time it was universally held to be entirely of Mosaic authorship, but it is now often regarded as a gradual compilation, of which the greater part dates from the reign of Manasseh. Nevertheless, much of the material in it is very old (see W. F. Albright, *From Stone Age to Christianity*, 1940; G. von Rad, *Deuteronomische Studien*, 1948). An earlier form was discovered in the reign of Josiah, and exercised a great influence on that monarch. The work sub-divides greatly. Chapters i-iv and v-xi give 2 introductory exhortations, the former being largely historical. After this come a variety of exhortations and historical accounts interspersed with poems. The high moral tone of the book is shown by the fact that of a quotation from it Christ said: 'On these words hang all the law and the prophets,' and that from D. were taken all Christ's answers to the Tempter in the wilderness. The name of the book is taken from the Septuagint trans. of the words 'this law' in chapter xvii. 18. See S. R. Driver, *Deuteronomy*, 1920; J. Finn, *The Unity of the Pentateuch*, 1917.

Deutsch, Emanuel Oscar Menahem (1829-73), Semitist, b. Neisse (Silesia), studied Hebrew under his uncle, a Talmudist, and in 1855 became an assistant librarian at the Brit. Museum. Besides contributing to Smith's *Dictionary of the Bible*, Kittel's *Cyclopaedia of Biblical Literature*, *The Times*, etc., he lectured on Semitic Palaeography and wrote on Phoenician inscriptions and other Semitic subjects in the *Saturday Review* and the *Athenaeum*.

Deutsch, Nicolas Manuel (1484-1530), Swiss painter, poet, and reformer, b. Bern. He studied painting at Colmar and at Venice under Titian, and was commissioned to paint a series of pictures for the monastery of his native city. This work, the 'Dance of Death,' was in the style of Holbein, but only copies of it exist. His 'Beheading of John the Baptist' (Basle) well illustrates his fanciful style of composition. In his latter years D. took an active part in public affairs, and especially distinguished himself as a promoter of the Reformation. His writings consist of various controversial treatises, *Moralities and Mysteries*, and popular songs.

Deutsch-Eylau, see ILAWA.

Deutsch-Krone, see WALZ.

Deutschbrod, see HAVLICKOV BROD.

Deutsche Bank, one of the big banks in Germany. It was founded in 1870 with its chief office in Berlin. Its main purpose was to provide a ready assistance in all financial matters to Ger. commercial men. The D. B. did good service in Germany's rapid development in industry and commerce during the last 2 decades of the 19th cent., and continued up to the outbreak of the First World War in 1914. In addition to branches throughout Germany, it had others in Europe, particularly in the SE. The D. B. amalgamated with the Disconto-Gesellschaft (founded 1856) in 1929. In 1933 the Dresdner and Commerzund Privatbank was also assimilated, and further widening of its network of branches took place in 1938.

'Deutsche Rundschau', Ger. monthly review, founded in Berlin by Julius Rodenberg, 1874, as a counterpart to the Fr. *Revue des Deux Mondes* (q.v.). In 1888 the D. R. was temporarily suspended by Bismarck on account of the pub. of the war-diary, 1870-1, of the Emperor Frederick (q.v.). After the First World War it entered the field of politics as an independent organ under the control of Rudolf Prechel, seeking to find a way out of the chaos in Germany. From 1932 onwards it strongly opposed National Socialism, until its publisher was arrested, 1942, and the review prohibited. It appeared again in 1946 in Berlin, but after the blockade was removed to Stuttgart. The D. R. favours the idea of European federation.

Deutz, tn of Germany, incorporated in Cologne (q.v.) in 1888.

Deutzia, genus of Saxifragaceae, grows wild in the N. of India, China, and Japan. *D. scabra*, *D. gracilis*, and *D. pulchra* are cultivated in Britain, and the first-named is remarkable for its silicious stellate hairs.

Deux Sèvres, see **SÈVRES, DEUX**.
Deva, in in Rumania, on the Mures 82 m. E. by N. of Timisoara. It has picturesque ruins. Pop. (1930) 10,500.

De Valera, Eamon (1882-), Irish patriot and statesman, b. New York City, his father being Spanish and his mother Irish. He was educ. in Ireland at Blackrock College and the Royal Univ. at Dublin. He gained sev. scholastic degrees and taught mathematics, Fr., and Latin in various colleges and educational establs. He was for many years a student of Irish and an active member of the Gaelic League. He joined the Irish Volunteers at their formation in 1913 and was adjutant of the Dublin brigade 1915-16, taking part in the Easter rising of 1916 as commandant. He was taken prisoner and sentenced to death, but the sentence was commuted to penal servitude for life. At the general amnesty in 1917 he was released, and again plunged into political affairs, being elected Sinn Féin M.P. for East Clare. From 1917 to 1921 he was president of the Irish Volunteers, and he was president of Sinn Féin (q.v.) from the former year until 1926 when Fianna Fail (q.v.) was founded. He was re-arrested in May 1918 and confined in Lincoln prison from which he escaped in Feb. 1919. Travelling to the U.S.A., he raised a loan of 6 million dollars for the Irish Republican movement. From 1919 to 1922 he was president of the 'Irish Republic.' He rejected the Anglo-Irish treaty in Dail Eireann during the debates of Dec. 1921 to Jan. 1922. He took part in the Civil war of 1922-23 and was imprisoned in Aug. 1923, being released in July 1924. He was leader of the Opposition in the Irish Free State parliament from 1927 to 1932. In the elections of 1932 he secured a sound majority over Cosgrave (q.v.), and became president of the executive council (i.e. prime minister). He met with some opposition in the country from O'Duffy's (q.v.) Blueshirt movement, which, however, he reduced to insignificance by the speech he made in the Dail when the Wearing of Uniforms (Restriction) Bill became law. He then went ahead with his programme of social, industrial, and agric. reform. Production and wages rose, and the numbers employed increased. The Senate was abolished and the governor-generalship was slowly whittled away until in 1937 it disappeared. The obligation of the Oireachtas to take the oath of allegiance to the Crown was abolished, as was also the right of appeal to the Judicial Committee of the privy council. D. played the leading part in framing the present constitution of the Rep. of Ireland by which the country became a sovereign independent state. In 1932 the Fianna Fail Gov. rejected the Brit. Gov.'s claim to payment of the land annuities; payment was therefore withheld, and the so-called 'Economic War' began. This conflict was ended by the London agreement which D. negotiated with Neville Chamberlain in 1938. The Brit. Gov. accepted £10,000,000 in final settlement, and Britain surrendered the right to enter or fortify S. Irish

ports. The elections which followed further strengthened D.'s position. In 1938 he was president of the assembly of the League of Nations; he had already in 1932 been made president of the League's Council for its 68th and special sessions. Before war broke out in 1939 D. began to intensify the campaign for ending the partition of Ireland, but his efforts were checked by the outbreak of I.R.A. terrorism. With the beginning of the Second World War D. brought the army up to war strength, and A.R.P. services were started. He had general support in declaring the neutrality of the Rep. of Ireland—a position which was maintained throughout the war.



Keystone Press

EMON DE VALERA

In Feb. 1948 following a general election D.'s party (Fianna Fail) was defeated by a combination of Fine Gael, Labour, Farmers', and other parties, and he was succeeded as Taoiseach (prime minister) by John A. Costello (q.v.); he then went to America and Australia to publicise the campaign against partition.

After the general election of 1951 he again became prime minister until 1954, when his party was narrowly defeated in a general election. The Fianna Fail party was again returned to power in the general election of March, 1957, and D. once more became Taoiseach. See **IRELAND, REPUBLIC OF, History**.

De Valois, Dame Ninette (**Edris Stannus**) (1898-), dancer and choreographer, and director of the Sadler's Wells Ballet, b. Ireland. She danced with the Diaghilev

Ballet from 1923 to 1926, in which year she founded a school. In 1931 she formed the Vic-Wells Ballet (see ROYAL BALLET), and has directed the fortunes of this company from its humble beginnings until its flowering into the national organisation it has become to-day. In addition to her achievements as organiser and administrator, which have led directly to Eng. ballet reaching parity with the ballet of other countries, she has devised the choreography of many ballets, particularly in the early years of the company's hist., the best known being *Job*, 1931, *The Haunted Ballroom*, 1934, *The Rake's Progress*, 1935, *Checkmate*, 1937, *The Prospect Before Us*, 1940, *Don Quixote*, 1950. She was awarded the C.B.E. in 1947, and created a D.B.E. in 1951.

Devanagari is the most important of the scripts of India, the script of Sanskrit, and the main literary vehicle of various Indian languages and dialects; it is also the official script of India. *Dera* means in Sanskrit 'heavenly,' and *D* means the 'Nagari of the Gods,' the 'divine,' 'royal,' or 'Brahman Nagari.' The original meaning of the term 'Nagari' is uncertain, but it is usually explained as 'writing used in cities' or 'town-script.' *D* developed in the 7th and 8th cents. AD from the Siddhamatrkā character, which descended from the W. branch of the E. Gupta (used in the 4th-5th cent. AD). The Gupta type, through other prototypes of the N. Indian sub-division, finally goes back to the Brahmi script, the mother-alphabet of all the Indian scripts (see ALPHABET). *D* consists of 48 signs, of which 14 are vowels and diphthongs, and 34 basic consonants known as *aksharas*. Its main weakness is its semi-syllabic character: a short *a* is inherent in each consonant unless otherwise indicated. Therefore in order to represent a pure consonant an oblique stroke, called *virama*, is placed below the character in question, or compounds of 2 or 3 basic consonants are used. *D*, being mainly used for Sanskrit (a purely literary language), has after a long course of literary treatment and grammatical refinement remained practically standardised during the last millennium. There are, however, 2 main varieties, the E. and the W.

Devant, David (1868-1941), illusionist, b. London, son of an artist in poor circumstances. He worked as a page boy and telephone operator, but spent much of his time in the study of conjuring. He began by touring in the provinces and, in 1893, appeared with Maskelyne at the old Egyptian Hall, from which time his reputation was established. He became Maskelyne's partner in 1905 and continued to perform at St George's Hall till attacked by a nervous breakdown at the beginning of the First World War. He was the leading conjurer of his day, and perhaps the foremost magician of all time. His books include *My Magic Life*, 1931, and *Secrets of My Magic*, 1936.

Devaprayaga, or **Deoprayag**, vil., 2266 ft above sea level, at the confluence of the Alaknanda and Bhagirathi, in the

dist. of Garwhal, India. The 2 rivers form the Ganges below Deoprayag. Here is the famous temple of Rama Chandra, the resort of Hindu pilgrims.

Dévaványa, tn of Hungary, in Békés co., 23 m. NNW. of Békéscsaba (q.v.). It is a railway centre, and has a trade in cereals, livestock, and tobacco. Pop. 15,500.

Development, in music, the 2nd section of a movement in sonata form, following the exposition, where the thematic material is subjected to various D.s according to the composer's fancy. The usual method is to develop the 1st or 2nd subjects or both, but subsidiary subjects may be used as well, or instead, and new matter may be introduced at will.

Development and Road Improvement Funds Act, 1909, provided for the appointment of roads boards with power to construct and maintain new roads and to make advances to co. councils and other highway authorities in respect of the construction of new roads and the improvement of existing ones. See also HIGHWAYS.

Development Commission, a gov. dept set up under the Development and Road Improvement Funds Acts of 1909 and 1910, for the purpose of administering funds for the development of agriculture, rural industries, and fisheries, land reclamation, and harbour maintenance.

Devenish, is. and par. in Lower Lough Erne, co. Fermanagh, N. Ireland, famous for its eccles. remains.

Deventer, General Sir Jacob Louis Van (1874-1922), S. African soldier, b. in Orange Free State. He came into prominence as one of Gen. Smuts' lieutenants during the Boer War, particularly in connection with the invasion of Cape Colony. He served on Botha's staff in the campaign in German SW. Africa, 1914-15. Commanded a mounted brigade at the outset of the campaign against the Germans in E. Africa, and eventually commanded the whole force. After much hard fighting he drove his opponent, Gen. Paul von Lettow-Vorbeck (q.v.), into Portuguese ter.

Deventer, industrial tn in the prov. of Overijssel, Netherlands, situated on the R. IJssel, 23 m. NNE. of Arnhem. It has exactly the appearance of a tn of the Middle Ages. Part of the prin. church dates from the 12th cent.; the crypt of St Leobinus is supposed to date from 1040. The Weigh-house is a curious little edifice of 1528. There are many elegant and charming houses, and iron foundries and carpet factories. In the Middle Ages *D*. was a Hanseatic city and an educational centre; Thomas à Kempis and Erasmus studied there. *D*. was captured from the Spaniards by Prince Maurice of Orange. The artist Terburg, whose pictures are to be found all over Europe, lived at *D*. and died there in 1681. Pop. 50,878.

De Vere, Sir Aubrey, originally Hunt (1788-1846), poet, b. Adare, Co. Limerick. He was educ. at Harrow, where Byron and Peel were his schoolmates. A country gentleman, he lived a life of retirement. His sonnets appeared first in 1842, and

were spoken of by Wordsworth as 'the most perfect of our age.' *Julian the Apostate*, was pub. in 1822, and *The Duke of Mercia*, a play, in the following year. See memoir by his son Aubrey (q.v.) in D. V.'s verse drama *Mary Tudor*, 1884.

De Vere, Aubrey Thomas (1814-1902), poet, b. Adare, Co. Limerick, son of the above. He was educ. at Trinity College, Dublin. In 1842 he pub. *The Waldenses, or the Fall of Rora*, which contained some exquisite lyrics, and in the following year he issued a companion vol., *The Search after Proserpine, Recollections of Greece, and other Poems*. Besides poems, he wrote in prose concerning Ireland's wrongs, for while he held no brief for the disruption of the union he was an ardent sympathiser with the distress of the Irish folk. *English Miscellany and Irish Misdeeds*, 1848, was the prin. of these works, *Ireland and Proportional Representation*, 1885, the last. Not a great poet, at his best, especially when the theme was romantic, he rose to a high level. He pub. his *Recollections* in 1897. See W. P. Ward, *Aubrey de Vere, A Memoir*, 1904.

Devereux, Robert and Walter, see ESSEX, EARL OF; ESSEX, R. D. (2nd and 3rd Earls); ESSEX, W. D.

Deveron, riv. of Scotland, rising on the Banffshire-Aberdeenshire border near Cabrach. It is at first merely a mt torrent, but flowing NE. through part of NW. Aberdeenshire and then re-entering Banffshire it gradually becomes broader and slower, until after a course of 61 m. it joins the sea at Banff. Salmon and trout abound in its waters.

Devers, Jacob Loucks (1887-). Amer. soldier, b. York, Pennsylvania; graduated at West Point. He became an authority on mechanisation and in 1939 was chief-of-staff responsible for the defences of Panama. In 1942 he was promoted to lieutenant-general and was chief of U.S. armoured forces. In 1943 he became commander of the U.S. forces in the European theatre of war and later deputy commander in the Mediterranean theatre. He relinquished this appointment to take command of the Sixth Army Group, consisting of U.S. and Fr. forces, operating in the S. of France and in Alsace. He was commanding general Army Ground Forces from 1945 until 1948. He retired from the army in 1949.

Devi, see DURGA.

Deviation, see COMPASS, MAGNETIC.

Devil (O.E. *deofol*, from Gk. via Lat. *diabolus*, 'Slanderer' = Heb. Satan, 'Adversary'; cf. the dominical comment, 'a liar, and the father of lies.' John viii. 44), in Christian, Jewish and Moslem belief, a fallen angel, who with a multitude of lesser devils was created good and glorious, but by rebellion against God became irredeemably evil and odious, and was cast out of heaven. With his fellow devils he became the enemy of God and His creatures, especially man whom he tries to seduce and ruin. He is not regarded as the source or personal principle of evil, but as the prime promoter and organiser of it. His existence and that of his attendant spirits is clearly

taught by Christ and throughout the N.T. Yet there has been a tendency among Protestant liberal theologians to deny it, for many reasons. In part they have perhaps been influenced by reaction against medieval imagery, depicting a devil as a scarlet satyr with a forked tail, ridiculous to modern eyes. But their chief argument has been that the belief is dualistic, personifying evil as a power over, or against, God. That this is a fallacy should be clear from the exposition given above. The devil is not thought of as a self-existent being, nor as a personification of evil, except in a poetic sense, but as a creature, like man, created good, but in rebellion.

The Hebrews were slow to distinguish primary from secondary causation, and tended for centuries to attribute all events, good and evil alike, to God as their source, except human sin. Even the impulse to evil was described as being from Him. The idea of permissive causality had not yet dawned on them. So the tempter of Eve is symbolically portrayed as a serpent, whom God had made, in Gen. iii; and in 1 Sam. xvi. 14 it is an evil spirit from the Lord that troubles Saul; in 2 Sam. xxiv. 1 God himself moves David to sin by taking a census, in contrast with the post-exilic version in 1 Chron. xxi. 1, which substitutes 'the Satan,' though still as God's agent; in 1 Kings xxii. 20-23 Micaiah sees a lying angel from God entering the false prophet. The name Satan first occurs in Job i (probably post-exilic), but (as in Chron.) with an article which shows that it is a title, not a proper name as yet. 'The Satan' is still an angel of God, whose duty it is to watch and report on the misdemeanours of man. Chronicles later adds the duty of testing him by suggestion of evil.

It has been suggested that the further development of Jewish demonology was due to Persian influence. Zoroastrianism was genuinely dualistic, teaching that the God of Light and Good, Mazda, was at war with the equally powerful God of Darkness and Evil, Ahriman. The same suggestion has been made about Angelology (see ANGELS; ARCHANGELS), but in neither case has it been convincingly demonstrated. It may reasonably be conjectured that what happened was that, in the disturbed conditions following the exile, the old conception of the Satan became theologically unified with hitherto unassimilated folk beliefs about evil spirits, as found universally among mankind, and dimly discernible in Lev. xvi. 5 (connecting Azazel, identified by Jewish tradition as a demon, with the scapegoat) and Isa. xlii. 21. At any rate in Tobit iii we find a real demon, Asmodeus, and a great deal about other demons is told us in the book, though they are always described as hostile, but inferior and subject to God and His angels. In Wisd. of Sol. ii. 24 the devil is finally identified with the serpent tempter of Eve. The apocryphal *Book of the Secret of Enoch* tells us of the revolt of Satan and his fall from heaven. In the N.T. the evil

one has a number of names, e.g. the Devil (Matt. iv. 5), the Tempter (Matt. iv. 3), Satan (Matt. iv. 10), Beelzebub (Matt. x. 25), the Adversary (1 Pet. v. 8), the Accuser of the Brethren (Rev. xii. 10), the old Serpent (Rev. xx. 2), and the great Dragon (Rev. xii. 9). Jesus recognises distinctly a Kingdom of Evil ruled by a Prince, the power of darkness, who is His chief adversary from the temptation to the cross, and whose unclean minions take possession of the souls of men, inflicting not only temptation but also physical mental disorders and disease upon them. Rev. xii depicts the struggle of the Church in terms of the primeval war in heaven between Michael and his faithful angels against the Dragon and his Angels, and the fall of Satan from heaven to find a sphere for his wicked purposes in the world, though one overruled by God's Will to a good end. Speculative theology has seen the Divine plan to raise man in dignity above the angels by the Incarnation as the occasion for the Angelic Revolt. See also SATANISM; WITCHCRAFT. C. G. A. Harnack, *History of Dogma*, 1895-6; J. Tixeront, *Histoire des Dogmes*, 1912-14; *Les Études Carmelitaines*, 'Satan' (Bruges), 1948.

Devil-fish, name applied to various fishes, chiefly belonging to the ray family, Mobulidae. It is also applied to the octopus, which is, of course, not a fish, but a mollusc, and to the angler fishes (q.v.) or sea-devils. Sea-devil rays have flat and tessellated teeth, broad flat bodies and long, thin, whip-like tails; they are voracious and crush molluscs with their hard teeth. Species of the different genera attain great size. The manta or greater devil fish (*Manta birostris*) grows to a weight of at least 3000 lb.

Deville, Étienne Henri Sainte-Claire, see **SAINTÉ-CLAIRE**.

Devil's Advocate, see **ADVOCATUS DIABOLI**.

Devil's Bridge: 1. Vil. in Cardiganshire, Wales, 10½ m. ESE. of Aberystwyth, on the R. Mynach which here joins the R. Rheidol, in a picturesque setting of rocks and waterfalls. Over the deep gorge (114 ft) are 3 bridges, the lowest and oldest (12th cent.) believed to have been built by the monks of Strata Florida Abbey, the middle bridge dating from 1753, and an iron road bridge having been constructed in 1901. Pop. 100.

2. Famous bridge in Switzerland (Ger. Teufelsbrücke) over the Reuss in the canton of Uri, 1¼ m. from the spot where the St Gotthard pass road comes out on to the valley of Andermatt. Here the riv., which is 4590 ft above sea-level, forms a fine waterfall of 100 ft. A big modern bridge was built by the side of it in 1955 to deal with the increasing traffic over the St Gotthard.

Devil's Coach-horse, or **Black Cocktail**, the beetle known less graphically as *Ocypus olens*. This species, which is Brit., is about 1 in. in length, narrow in shape, active in habit, and usually carnivorous in diet.

Devil's Dyke: 1. Anct earthwork extending from Wood Ditton to Reach in

Cambs, England. It is 18 ft high, and once formed a boundary between E. Anglia and Mercia.

2. A huge fissure 4½ m. NW. by N. of Brighton in Sussex, England. It is the object of excursions for tourists from Brighton.

Devil's Island, French Guiana, see **SALUT, ÎLES DU**.

De Vinne, Theodore Low (1828-1914), Amer. printer and writer on typography, b. Stamford, Connecticut, and early apprenticed to a printer. At 19 he was employed by Francis Hart of New York; became junior partner in 1858, and after Hart's death in 1877 changed the name of the firm to Theo. L. De Vinne & Co. He was part-founder and president of the Grolier Club, whose early publs. were produced by the De Vinne Press. His work was invariably of the highest quality; the *Century Dictionary* showing his artistry and care. His chief works are *The Invention of Printing*, 1876; *The Practice of Typography*, 1900-4; and *Notable Printers of Italy during the Fifteenth Century*, 1910.

Devizes, mrkt tn and municipal bor. of Wilts, England, near the Kennet and Avon Canal. The tn owes its origin to a magnificent castle, of which very few fragments remain, built by Roger, Bishop of Salisbury, about 1132. Round the castle grew up a prosperous tn which from the time of Henry VIII till about 1820 was famous for its cloth, and from the time of Edward III for its wool. The tn, besides its modern castle, contains a remarkable Gothic mrkt-cross, the partly Norman churches of St John and St Mary, a museum, and a corn-exchange. Its prin. industry at the present day is building, and contracts are sought for public works. Light electrical products are manuf. Pop. 7920 (1954).

Devolution: 1. The first war embarked on by Louis XIV of France with the single object of extending the boundaries of his kingdom is known as the War of Devolution (1667-8). When his father-in-law, Philip IV of Spain, died, Louis, by introducing a civil right of inheritance into politics, claimed Flanders as the possession of his wife, Maria Theresa.

2. Also the name given to the schemes for the administration of Ireland, as enunciated by the Irish Reform Association, formed in 1903.

Devon (or **Devonshire**), SW. co. of England, bounded by the Bristol Channel on the N., by Cornwall on the W., the Eng. Channel on the S., and Dorset and Somerset on the E. It is the third co. in size in England, with an area of 2604 sq. m. The surface is hilly, with the rolling upland of Dartmoor, broken into numerous rugged 'tors,' in the SW.; Exmoor in the NW.; and the E. Devon plateau. On the lower slopes the soil is fertile, especially in the lower Exe valley, with its orchards and mrkt gardens. The coast-line of D. extends for about 150 m.; the N. coast is very rugged, with cliffs 400-500 ft high and great rocky inlets, of which the chief is Bideford Bay. On the S. coast are Bolt Tail and Start Point among others; and Tor Bay and Plymouth Sound, one of

the finest harbours in the kingdom. The chief riva. are the Tamar (59 m.), the Exe (54 m.), the Dart, the Teign, the Tav, the Torridge, and the Plym. Parts of D., particularly Dartmoor, are rich in pre-historic remains. It was one of the last co. conquered by the Saxons, and became one of the wealthiest, with an economy based on farming, fishing, mining, and the tin and woollen trades. There was a large overseas trade also, providing a nursery for the D. seamen; during the 17th cent., however, this began to decline.

D. is primarily a pasture co., and is famous for its cattle and dairy produce. It is rich in minerals; the tin mines were long important, and copper, lead, iron, and manganese have all been worked, as well as china and terra-cotta clays, granite, limestone, and sandstone. There is some inshore fishing; shell fish are more plentiful than other varieties. Apart from the naval dockyards at Plymouth, the chief industries of the co. are the ball and china clay industry to the S. and W. of Dartmoor, farming, and the tourist trade. Exeter is the co. tn; other tns of importance are Plymouth, with its dockyards, Torquay, and Paignton, noted resorts; Exmouth, Burnstaple, Tiverton, Teignmouth, Sidmouth, and Bideford. Famous Devonians include St Boniface, the Anglo-Saxon missionary to Europe; Bracton, the great medieval lawyer; Sir Francis Drake and Sir Walter Raleigh; Sir John Hawkins, John Davis, Sir Humphrey Gilbert, and Sir Richard Grenville; Princess Henrietta, Duchess of Orleans; John Churchill, Duke of Marlborough; Newcomen, the engineer; Sir Joshua Reynolds; Joanna Southcott; S. T. Coleridge; and Charles Kingsley.

The co. returns 6 members to Parliament. Pop. 798,283. See *Devon and Cornwall*, Survey Committee of the University College of the South West, 1947; Nikolaus Pevsner, *South Devon and North Devon* (Penguin Buildings of England Series), 1952; Devon County Council, *Development Plan Analysis*, 1952; D. St Leger Gordon, *Dartmoor*, 1953, and *Devonshire*, 1950; W. G. Hoskins, *Devon*, 1954; and *Devon* in the Victoria County History.

Devon, riv. of Scotland, which rises in the Ochil Hills at a height of 1800 ft. It is noted for its beautiful scenery, which has been immortalised by Burns. There is a series of remarkable falls below the Crook of Devon, known as the Devil's Mill, Caldron Linn, and Rumbling Bridge. Trout abound in the riv., and after a course of 33 m. it falls into the Forth at Cambus.

Devon Breed, see CATTLE.

Devonian System, in geology, the stratigraphical name applied to the Palaeozoic rocks lying between the underlying Silurian and the succeeding Carboniferous System.

The marine deposits formed during the D. Period are known as Devonian, but the continental deposits of the same age are called the Old Red Sandstone. The D. period was one in which much of N. Europe was a continent while to the S. of

a line running through the Bristol Channel marine conditions prevailed. Extensive vulcanicity occurred in D. times, many traces of which remain in the Midland Valley of Scotland.

Devonport, Hudson Ewbank Kearley, 1st Viscount and Baron of Whittington, Buckinghamshire (1856-1934), politician, educ. at Cranleigh. He represented Devonport as a Liberal from 1892 to 1910, being port. secretary to the board of trade from 1905-9. From 1909-25 he was first chairman of the Port of London Authority. During the First World War he was food controller (1916-17) and he received his viscounty in 1917.

Devonport (before 1824 called **Plymouth Dock**), until 1914 port., municipal, and co. bor., situated on a peninsula formed by the Hamoaze and Stonehouse Pool at the head of Plymouth Sound, and forming with Plymouth and Stonehouse the 'Three Towns.' D. is one of the chief naval and military stations in the Brit. Is.; it owes its origin to the dockyard estab. here by William III in 1689. The naval estab. extend nearly 4 m. along the Hamoaze and include, besides the original dockyard, the Keyham steam yard and factory, the gun-wharf, the Gov. House and Admiralty House on Mt Wise, the naval and military barracks, and the Royal Naval Engineering College at Keyham. In 1836 fresh extensions were begun at the Keyham Yard, which were opened under the name of Devonport North Yard by the Prince of Wales in 1907, and this dockyard has since been further extended. There is a powder magazine on Drake's Is. at the entrance to the Hamoaze (estuary of the Tamar); Mt Edgcombe on the N. side is guarded by forts, and the harbour is fortified and guarded by warships. D. and Stonehouse were amalgamated with Plymouth in 1914, the 3 now forming the city of Plymouth, having been so designated by royal letters patent on 18 Oct. 1928.

Devonport, tn and tourist centre on NW. coast of Tasmania, 65 m. from Launceston, with good port facilities; an outlet for agric. produce, potatoes, peas, sheep. The modern airport is being extended to handle daily inter- and intra-state services. Pop. 11,000.

Devonshire, Spencer Compton Cavendish, 8th Duke of (1833-1908), statesman, eldest son of the 7th duke, educ. at Trinity College, Cambridge. In 1857 he entered Parliament, as a Palmerstonian Liberal, and in 1874, on the defeat of Gladstone at the general election, and his resignation of the leadership of the party, the Liberals chose Lord Hartington (as D. was then known) in his stead. In 1880, on the defeat of Disraeli, he was invited to form an administration, but Gladstone having returned to the House to take up the matter of the 'Bulgarian atrocities,' he withdrew in favour of his old chief. In 1882 he went to the War Office, and was there during the period of disaster which resulted in the evacuation of the Sudan and the death of Gordon. Owing to his views on Home Rule he declined office when Gladstone again came

into power in 1886, and moved the rejection of the Bill, which shortly afterwards was thrown out on the second reading by a majority of 90. At the general election which followed, the Conservatives and the Liberal-Unionists (as the seceders called themselves) were in a majority, and Lord Salisbury invited Hartington to join a coalition ministry, in which he would accept office. This Hartington declined to do, but in 1894 he finally accepted office in a Conservative gov. He had succeeded his father to the dukedom in 1891. He then became President of the Council under Salisbury, and retained his office under Balfour. In 1904 he resigned, being opposed to the policy of tariff reform, which henceforth became the leading feature in the Conservative programme. D. was an intimate friend of Edward VII. In his early days he was fond of hunting, and all his life he was a notable race-goer; racing was, perhaps, his chief interest outside politics. See life by B. Holland, 1911.

Devonshire, Victor Christian William Cavendish, 9th Duke of (1868-1938), politician, eldest son of 3rd son of 7th duke, educ. at Eton and Trinity College, Cambridge. He entered Parliament at the age of 23 as Conservative member for W. Derbyshire, a seat that had been held by the Cavendish family for the greater part of 2 centuries. He succeeded to the dukedom in 1908. He held a number of political appointments, and from 1916 to 1921 was governor-general of Canada. After the break-up of the coalition ministry he became, in 1922, colonial secretary, and by coming forward with a personal guarantee of £500,000 was largely instrumental in saving the project of the Brit. Empire Exhibition at Wembley from abandonment. His son, *Edward William Spencer Cavendish, 10th duke of D.* (1895-1950), was educ. at Eton and Trinity College, Cambridge, and was colonial secretary 1943-5. He was succeeded to the dukedom by his son, *Andrew Robert Buxton Cavendish (b. 1920).*

Devonshire, see DEVON.

Devrient, name of a Ger. family of actors, particularly Ludwig D. (1784-1832), who was noted for his Shakespearean rôles, and his 3 nephews, Karl August (1797-1872), Philip Eduard (1801-77), and Gustav Emil (1803-72). The last was noted for his Hamlet which he played in London and Dresden. Otto D. (1838-94), the son of Philip Eduard, was also noted for his adaptation of Goethe's *Faust*, 1876. Other plays by him were *Tiberius Gracchus*, 1871, and *Gustav Adolf*, 1891. Max D. (1857-1929) was the son of Gustav Emil and followed in his father's profession.

De Vries, Hugo (1848-1935), Dutch botanist, b. Haarlem, educ. at Leyden and Heidelberg, and under Julius Sachs at Würzburg. After holding various educational posts in Germany, he accepted the professorial chair of botany in Amsterdam, where he applied himself to the problems of evolution as they affect plant life. In his botanical research work he was

influenced by the Mendelian theories, and originated the theory of mutation. He made special use of the *Oenothera lamarckiana*, or evening primrose, which now grows profusely in Europe, though originally a native of America. See essays in *Berichten der deutschen botanischen Gesellschaft*; and his prin. work, *Die Mutationstheorie*, 1901-3.

Dew (Old Eng. *deaw*), the moisture found on the surface of the earth during the night and early morning, particularly after a hot day, and produced by condensation of the vapour of the atmosphere on contact with the earth cooled by radiation. The old theory, dating from the earliest times, was that D. fell from above; it was Dr W. C. Wells, of London, in his *Essay on Dew*, 1814, who promulgated the above theory of radiation. He went on to say that for every definite pressure and temp. of the atmosphere there is a definite quantity of water-vapour which can be kept in suspension until it comes in contact with some cool substance, and is itself cooled below a certain temp., when the vapour will condense. This point of temp. is called the 'dew-point.' In 1885 Aitken by experiments discovered that while undoubtedly some of the moisture called D. was the result of condensation of the atmosphere, the 'greater part' is formed from moisture 'just risen from the earth or to the surface of plant leaves.' During the night, when evaporation ceases to a great extent, the vapour still rising from the ground is either condensed at once on its cold surface, or is trapped by the grass or plant-leaves which have cooled even faster than the surface of the ground. D. can be formed only under certain conditions: wind can prevent the atmosphere from remaining sufficiently long in contact with the earth to cause condensation, and a cloudy sky prevents D. by checking radiation. When the temp. of objects with which the vapour comes in contact falls below freezing point, the D. is condensed into a solid substance and is called 'hoar-frost.' The average ann. deposit of D. near London is 1 to 1.5 in.

Dew Line, see DEW SYSTEM.

Dew Ponds, found on the upper reaches of the chalk hills in the S. of England and in a few other localities. They are used as a source of water supply for cattle, and it was once thought that they were entirely dew-, not rain-fed. See Gilbert White, *Natural History and Antiquities of Selborne*, 1789. D. P. do not readily dry up in a hot dry summer, and so far no adequate reason has been found.

Dew System, distant early warning system of radar stations and air strips set up in the N. Amer. Arctic by agreement between the U.S. and Canadian Govs. in 1955. See *Canada. Treaty Series (Ottawa)*, 1955, No. 8.

Dewar, Sir James (1842-1923), chemist and physicist, b. Kincardine-on-Forth. He early developed a taste for music, and made violins. Educ. at Dollar Academy and at Edinburgh Univ., where he assisted Lyon Playfair. Also studied at Ghent and later was demonstrator of chem. at

Edinburgh, and lecturer in the Dick Veterinary College. In 1875 he became Jacksonian prof. of Natural Experimental Philosophy at Cambridge, and in 1877 was made F.R.S. and Fullerian prof. of chem. at the Royal Institution, London. Among numerous other honours, he received the Rumford medal of the Royal Society in 1894, was the first holder of the Hodgkins gold medal of the Smithsonian Institution, Washington, and the first Brit. scientist to be awarded the Lavoisier medal of the Fr. Academy of Sciences (1904). He was co-inventor with Sir Frederic Abel of cordite, made valuable experiments in spectroscopy and investigated the physiological action of light; but his 'low temperature' discoveries form his most valuable contribution to science. Besides being the first to demonstrate before a public audience the liquefaction of oxygen and air, he invented an apparatus by which liquid oxygen by the pint can be produced, devised vacuum-jacketed vessels (now known universally as thermos flasks) for the storage of liquid gases, first collected liquid hydrogen (in 1898), and finally (1899) succeeded in solidifying this gas as he had previously (1886) solidified oxygen. His experiments showing the gas-absorbing properties of cooled charcoal led, during the First World War, to the invention of antidotes to poison-gas. He was knighted in 1904; and d. at the Royal Institution, London. See also BELLBY; CARBONISATION.

Dewberry, or *Rubus caesius*, is a species of Rosaceae nearly related to *R. fruticosus*, the bramble. It receives its name from the fine waxy secretion which covers the black shining fruit and somewhat resembles dew. The fruit resembles the bramble in appearance, but is somewhat coarser and more acid, and the plant is also called the running briar. See also BLACKBERRY.

D'Ewes, Sir Simonds (1602-50), antiquary, b. Suffolk and educ. at St John's College, Cambridge. He was knighted in 1626, and became an M.P. in 1640, being expelled from Parliament during Pride's Purge, 1648. His parl. records are of great historical value. See *The Autobiography and Correspondence of Sir Simonds D'Ewes*, ed. J. O. Halliwell, 1845; and W. Notestein, *The Journal of Sir Simonds D'Ewes*, 1923.

De Wet, Christian Rudolph (1854-1922), Boer gen. and statesman, b. at Farm Leeuwkop, Orange Free State, served in the first war (1880-1) between the Eng. and his countrymen as a field cornet. From 1885 to 1897 he was a member of the Orange Free State Volksraad, and when the S. African War broke out in 1899 he became general and commander-in-chief of the Free State forces, fighting at first under Cronje in the W. He proved himself perhaps the most formidable of all the Boer leaders in guerrilla tactics. In 1907 he was elected a member of the new parliament of the Orange Free Colony and also minister of agriculture. In the Closer Union convention of 1908-9 he was a delegate. An ardent Nationalist at heart, he chose the picturesque role of

the Dutch patriot rather than join the greater cause as a S. African. He gave expression to his views in 1912, when he joined Gen. Hertzog, who was pursuing a separatist policy, and therefore seceded entirely from the S. African party. He became an active member of the National party, and the outbreak of the First World War gave him the opportunity of expressing his extreme views in an active form, for he headed a revolt against the gov. He was captured by Botha in Dec. 1914 and brought to trial on charges of high treason, on many of which he was convicted. He was sentenced to 6 years' imprisonment and fined £20,000. After being in captivity for a year he was released on giving an undertaking not to engage in political agitation. He d. at Bloemfontein.

De Wette, Wilhelm Martin Leberecht (1780-1849), Ger. theologian, b. Ulla, near Weimar. Influenced by Herder, and studied theology under Paulus. Prof. of theology at Heidelberg (1807-10) and Berlin Univs. His fearless but spiritual criticism of the Bible distinguishes him from pure rationalists like Paulus and from the school of orthodox writers and super-naturalists. His chief works are *Commentar über die Psalmen*, 1811; *Über Religion und Theologie*, 1815; and *Einkleitung in das Neue Testament*, 1836.

Dewey, George (1837-1917), Amer. adm., b. Montpelier, Vermont, U.S.A. Graduated at the Anier. Naval Academy in 1858. He served with the Mediterranean Squadron until the outbreak of the Civil war, when he was made executive officer of the sloop *Mississippi*. He was in the fleet commanded by Adm. Farragut when the latter forced the passage between Fort St Philip and Fort Jackson which guarded the entrance to the Mississippi some 70 m. below New Orleans. He also took part in the action by which Farragut captured that great S. city and port. After the war D. was made commander in 1872 and capt. in 1884. In 1887 he was an instructor at the Naval Academy. He was made a commodore in 1896, and when the Sp.-Amer. war broke out was in command of the fleet in Asiatic waters. He received secret orders to proceed to the Philippines and engage the Sp. fleet, which was lying in Manila Bay. Under the cover of darkness on the night of 30 April, D. sailed his fleet of 9 ships through without being discovered. The 10 Sp. ships under Adm. Montojo had the protection of the guns of Cavite, a tn near Manila. The battle which ensued soon after dawn was short and decisive, for the weight of metal was on the side of the Americans. By early afternoon the Sp. fleet was a mass of smoking ruins, and hundreds of Spaniards were dead or wounded. Not a single Amer. ship was disabled or a single sailor killed. The news astonished the U.S.A., and D. became a popular hero. D. and his fleet participated in the capture of Manila. After the war was over D. returned home, and was given a triumphant welcome. He was promoted adm., and Congress gave him a sword of honour. He served

on the first Philippine commission in 1899, and in 1901 was president of the court of inquiry into the controversy arising out of the naval battle of Santiago. D. was made president of the General Board of the Navy Dept in 1900, and held the office until his death 17 years later. See J. Barrett, *Admiral George Dewey*, 1899.

Dewey, John (1859-1952), Amer. philosopher, b. Burlington, Vermont; son of Archibald S. D. Educ. at univ. of Vermont; Ph.D., Johns Hopkins, 1884. Prof. of philosophy at univ. of Minnesota, 1888-9; of Michigan, 1889-94; of Chicago—where he was also director of the School of Education—1894-1904; and then for more than 30 years at Columbia Univ., where he was prof. of philosophy and later prof. emeritus. He has been termed a pragmatist; but his is not the pragmatism of Wm James; it is more like the pragmatism of Peirce, and is more generally called instrumentalism. In Sept. 1929 he presided at the inauguration of a League for Independent Political Action—intended to supply a new Labour party in Amer. politics. Works include: *Psychology*, 1886; *Critical Theory of Ethics*, 1894; *Study of Ethics*, 1894; *How I've Think*, 1909; *Democracy and Education*, 1916; *Human Nature and Conduct*, 1922; *Experience and Nature*, 1925; *The Public and its Problems*, 1927; *The Quest for Certainty*, 1929; *Art as Experience*, 1935; *Logic, the Theory of Enquiry*, 1938; *Freedom and Culture*, 1940. See W. T. Feldman, *The Philosophy of John Dewey*, 1934.

Dewey, Melvil, see CATALOGUES AND CLASSIFICATION.

Dewey, Thomas Edmund (1902-), Amer. lawyer and politician. He was educ. at the univ. of Michigan and studied law at Columbia Univ. In 1925 he entered the legal profession, becoming in 1931 assistant to the U.S. attorney for the S. dist. of New York, and 4 years later he was appointed special prosecutor for the Investigation of Organized Crime in New York. In this capacity and in the more important position of district attorney for New York, to which he was appointed in 1937, he was prominently associated with the suppression of racketeering. He took an active part in the presidential campaign in 1940 on behalf of Wendell Wilkie, the Republican candidate, and his speeches during the campaign were pub. in the same year under the title *The Case against the New Deal*. In 1942 and again in 1946 and 1950 he was elected governor of New York, and his administration was notable for its drive against inefficiency and corruption. His success led to his nomination as Republican candidate in the presidential election of 1944. He polled over 40 per cent of the votes but lost the election to President Roosevelt by some 3½ million votes. In 1948 he was again defeated, by Roosevelt's successor President Truman. D. retained much influence in the Republican Party, however, and helped to promote the candidature of Eisenhower (q.v.) in 1952 and 1956. See R. Hughes, *Thomas E. Dewey*, 1944.

De Windt, Harry (1856-1933), explorer

and journalist, acted as aide-de-camp to his brother-in-law, Rajah Brooke of Sarawak, from 1876 to 1878. From 1887 to 1894 he divided his time between reaching France by land from Pekin, travelling on horseback to India via Persia from Russia, and inspecting the mines and especially the prisons of Siberia. In 1895 he was chosen Eng. delegate at the Penal Congress in Paris. His effort to cross from New York to Paris by land, undertaken in 1896 for the *Pall Mall Gazette*, ended in wreckage on the Bering Straits, but in 1901-2 he successfully accomplished the journey the other way round (Paris to New York) for the *Daily Express*. Was special correspondent of the *Westminster Gazette* in 1906 in the Balkans and Russia, the sequel being the illuminating book entitled *Through Savage Europe*, 1907. Pub. also *My restless Life*, 1908, *A Woman in Black*, 1912, *Russia as I Know it*, 1916.

De Witt, Cornelius (1623-72), Dutch burgomaster and patriot, brother of J. de W. (q.v.), b. at Dort, of which he became burgomaster at the age of 27. It was through his influence that his more famous brother became pensionary of Dordrecht. He supported his brother's policy with great ability and courage, notably when he sailed with de Ruyter after the proclamation of the 'perpetual edict'—of which he disapproved—abolishing the hereditary office of stadtholder. But after the disaster of 1672 the partisans of the House of Orange whipped up popular feeling against the 2 brothers, and Cornelius was arrested on a false charge of conspiring to poison the prince of Orange. He was murdered by the mob on his release from prison.

De Witt, Jan (1625-72), Dutch statesman, b. at Dort, the son of Jacob de W., a burgomaster of Dort and deputy to the states of Holland, from whom he inherited his republican principles. In 1650 he was elected pensioner of Dort, and unsuccessfully opposed the war against England. The disasters of the war made his pacific policy so popular that in 1653 he was elected grand pensionary of Holland for a period of 5 years, and was re-elected in 1658 and 1663. In the meantime William II, the stadtholder, had died, leaving only an infant as heir, so that de W. was able to turn from his opposition to the dynastic pretensions of the family of Orange to international politics. In 1654 he negotiated a treaty with Cromwell with a secret proviso that no member of the House of Orange should be made stadtholder. On the accession of Charles II to the throne of England the treaty of peace was rendered void, and in spite of de W.'s efforts for peace, war broke out again between the 2 countries in 1665. De W. conducted it with vigour and skill, and on the death of Adm. Opdam personally took command of the fleet, and by his diplomatic skill contrived the treaty of Breda (1667) and the formation of the triple alliance between Holland, England, and Sweden (1668) to frustrate the designs of Louis XIV in Holland. Louis, however, bribed Charles II to desert

the alliance, and in 1672 suddenly invaded the United Prov. The action was too sudden to render preparation possible; the people blamed de W., and appointed the young prince of Orange commander of the forces. De W. thereupon resigned his office of pensionary. His brother, Cornelius, had been tried and acquitted on a charge of conspiring against William, and Jan de W. went to meet him on his release. An infuriated mob burst into the prison, probably at the instigation of William of Orange's followers, and murdered both brothers.

Dewsbury, mkt tn. co. and parl. bor. in the W. Riding of Yorks, England, on the R. Calder, 8 m. SSW. of Leeds, in the heart of the woollen dist. D. is a tn of great antiquity, and, according to tradition, Paulinus preached Christianity to the heathen Saxons on the site of the par. church in AD 627. Among the public buildings are the par. church of All Saints, with some remains of early Eng. architecture (rebuilt in the 18th cent.), the tn hall (1888), the Wheelwright Grammar Schools, a covered and an extensive open mkt, and a theatre. The 14th cent. court house of the rectory manor is used as a par. hall; Crow Nest Park is 73 ac. in extent. Coal is worked in the neighbourhood, and industries include woollen and shoddy mills for blankets, carpets, druggists, and worsted yarn, engineering, and dyeing. Pop. 53,476.

Dexter, Henry Martyn (1821-90), Amer. Congregationalist minister. He was pastor of a church in Manchester, New Hampshire (1844-9), and later at the Pine Street Church in Boston (1849-67), but also found time to edit the *Congregationalist*, 1851-90, and the *Congregationalist Quarterly*, 1858-60. Furthermore he was the author of many treatises, chiefly on Congregationalism (1865-85).

Dexter, see *HERALDRY, The Shield and its parts*.

Dexter Breed, see *CATTLE*.

Dextrine, or **British Gum**, the soluble or gummy substance obtained from starch by the action of diastase or certain acids on starch, or by heating starch to 392° F. (200° C.). D. and starch are related in structure, and both possess the empirical formula $C_6H_{10}O_5$. D. receives its name from its power of rotating the plane of plane polarised light to the 'right', i.e. in a clockwise direction as viewed through the eyepiece of the polarimeter (q.v.). Pure D. is an odourless, whitish substance. It does not reduce Fehling's solution. It is often used as a substitute for gum-arabic for stiffening materials, sizing papers, and thickening ink; also for postage stamps and adhesive labels.

Dextrose, also called glucose grape-sugar, and diabetie sugar, a carbohydrate of the formula $C_6H_{12}O_6$. It occurs in honey, grapes, in the body fluids of the animal kingdom, and in the urine of diabetie patients. It forms about 0.15 per cent of normal arterial blood. The sugar of grapes consists largely of D. as the fruit ripens, but when quite ripe it becomes 'invert' sugar, that is equal quantities of D. and laevulose. Pure D.

crystallises in 6-sided plates; it melts at 86° C., and loses its water of crystallisation at 110° C.; it is soluble in water but only slightly soluble in alcohol. Invert sugar or saccharum is used in the brewing industry. It is prepared by treating cane or beet sugar with dilute acid. The excess of acid is removed with chalk, and the product concentrated to a thick syrup. D. by itself is prepared from starch, which is treated with boiling dilute acid. The product is first a mixture of dextrin and maltose and then becomes D. In Britain the starch used for the manuf. of D. is usually (in normal times) sago, rice, or maize; in Germany, potatoes; and in America, maize. D. is used as the sweetening factor in jams, etc.

Dey (Turkish *dai*, a maternal uncle), form of address originally given to elderly men and taken by the janissaries as the title of their commanders, a commanding officer of the janissaries frequently becoming governor of the prov. in which he served. The name was given to all rulers of Algeria before the Fr. conquest, and was extended to Tripoli, and to Tunisia in the form 'bey.'

Dezful, dist. and tn of Khuzistan, Persia. The tn is situated on the R. Dez, to the N. of Ahvaz. In the vicinity are the ruins of Susa. Pop. of tn 52,200.

Dezhnev, or **East Cape**, N.-easternmost point of Asia, situated at the entrance to Bering Strait in 190° E. A distance of about 56 m. separates it from Cape Prince of Wales on the Amer. shore.

Dharma-shastra, the title given to the whole code of Hindu law, but more especially to that collection of law received directly from a divine source by the sages Manu, Yagnavalkya, and others. It is divided into 3 parts: *Achara*, rules of conduct and practice; *Vyavahara*, the administration of justice; *Prayaschitta*, penance.

Dhaulagiri, peak of the Himalaya Mts, once regarded as the loftiest, but now known to be the 6th highest. It is 26,811 ft and is situated in N. Nepal, lat. 29° N. and long. 83° 30' E. Attempts to reach the summit were made by a Swiss party in 1953 and by an Argentine party in 1954. Both reached 25,000 ft before the attempts had to be abandoned.

Dhole, species of wild dog (*Cuon javanicus*) found in packs in many parts of India. It is somewhat larger than the jackal, differs from the true dogs (genus *Canis*) in having fewer teeth, is fierce and cannot often be tamed.

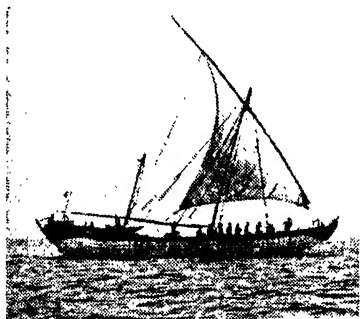
Dhow, the regular Arab trading vessel of the Arabian Sea and E. African coast; formerly used more particularly for the slave trade. It is generally from 150 to 200 tons burden, with a very long yard, and a single mast with a lateen sail. The language to which the word belongs is unknown.

Dhunchee (botanical), Bengal hemp, a long strong fibre used in making cordage. It is derived from *Sesbania aculeata*, an E. Indian ann. herbaceous plant of the family Fabaceae.

Diabase, basic igneous rock consisting of augite and tridinic felspar with iron

oxides, to which is sometimes added apatite or olivine. Owing to the weathering of these rocks, the augite, which is black, speedily changes to chlorite and urallite, which cause the rocks to assume a green colour, whence its old name of greenstone is still sometimes used. The terms diabase and dolerite are used for different facies of the same set of rocks, the former being really a weathered form of the latter. Popular names for D. are trap, toadstone, and whin. They form excellent stones for road-mending, and many are found in the N. of England.

Diabelli, Antonio (1781-1858), Austrian composer, b. Vienna; also founder of a firm of music publishers. He is chiefly remembered by the fact that a waltz composed by him was used by Beethoven as the theme of his *Thirty-three Variations on a Theme by Diabelli* (Op. 120).



ARAB DHOW

E.N.A.

Diabetes, a disease characterised by increased output of urine. *D. mellitus* is a metabolic disease in which the body is incapable of fully utilising carbohydrate and characterised by a raised sugar content of the blood (hyperglycaemia) and sugar in the urine (glycosuria). The normal fasting blood sugar level is about 100 mg. per 100 ml., and it is found that when the blood sugar level is raised to 180 mg. per 100 ml. there is a leakage through the kidneys into the urine. The level at which this leakage occurs is known as the 'renal threshold.' A few people in normal health have a lowered renal threshold and consequent leakage of sugar on any slight rise within normal limits of the blood sugar. Glycosuria in these subjects is of no significance. In common parlance the term D. is always used as meaning the disease *D. mellitus*. It is caused by the failure of the cells of the pancreas (q.v.), called the is. of Langerhans, to secrete sufficient insulin. Insulin, a hormone, is essential to the utilisation of sugar by the body. Hence in a state of insulin deficiency the body fails to metabolise sugar, which therefore remains in increasing amounts in the blood, and this, as we have seen, spills

over into the urine, giving the 2 cardinal signs of *D. mellitus*—hyperglycaemia and glycosuria. *D. mellitus* is a chronic, often inherited, disease and may show itself at any age. When it starts in childhood it is apt to be progressive because the process of growth throws greater demands on metabolism and hence on insulin requirements. Until the discovery of insulin by Banting and Best in 1922 (see MEDICAL RESEARCH) and its production for therapeutic purposes, *D. mellitus*, except in the milder cases, terminated fatally, the average expectancy of life being about 10 years. With modern methods of treatment the expectancy of life may well remain unchanged. The symptoms of *D. mellitus* are increasing hunger and thirst, polyuria, and progressive loss of weight. In untreated cases or cases which are being treated but not under proper insulin control the disease progresses to the state of ketosis. Ketones, the poisonous products of abnormal fat metabolism, are formed in the body by a disturbance of the normal oxidation of fats that, in turn, is dependent on normal carbohydrate metabolism. Loss of appetite, nausea, vomiting, abdominal pain, shortness of breath, drowsiness, and a smell (like pear drops) of acetone in the breath are symptomatic of the onset of ketosis in a case of *D. mellitus*. In the absence of treatment the next, and terminal, stage is coma and death. Ketosis may occur rapidly when an otherwise well controlled case of *D. mellitus* is complicated by the intervention of another complaint. Acute infections such as gastroenteritis, pyelitis, tonsillitis, or pneumonia, or septic conditions such as boils and carbuncles (to which diabetics are unduly susceptible), disturb the insulin-carbohydrate balance and may precipitate a ketotic crisis. Treatment consists in reducing the strain on the already strained metabolism by reducing the amount of carbohydrate in the food and giving insulin by injection to fortify the body's own deficiency. At one time carbohydrate in the diet was reduced almost to the point of elimination and insulin, when it became available, was used as sparingly as possible. The more satisfactory policy now is to allow the patient a more liberal diet and so a more interesting and satisfying one, and to give insulin in doses sufficient to render the urine nearly sugar-free. The patient is instructed in diet and insulin dosage and in how to test the urine daily for the presence of sugar. Provided the patient is intelligent and strictly follows the rules, a well-balanced control of the disease is maintained. Ketosis and coma should not occur unless the patient neglects the warning signs, and provided, of course, that an intercurrent disease (see above) does not supervene. Blood sugar estimations are necessary at regular intervals to provide a more accurate check on the disease than is given by the rougher method of urine analysis. Much research has been done trying to find a form of insulin which can be given effectively by mouth. Insulin is destroyed by the

gastric juices, and no means of overcoming this obstacle have yet been found. However, Dr F. Sanger and his colleagues at the dept of biochemistry at Cambridge Univ. succeeded in 1955 in discovering the nature of the insulin molecule. It is comprised of no less than 777 atoms. It may be that some synthetic rearrangement of these atoms to form a 'near insulin' that will still be therapeutically effective and yet unaffected by the gastric secretions may now be possible. But this is by no means certain. Another line of research is being done into the possibility of grafting healthy pancreatic tissue into diabetics. Meanwhile progress has been made in the production of better and longer-acting insulins, notably the recent insulin zinc suspensions (lente, semi-lente, and ultra-lente) from Denmark. *D. insipidus* is a disease characterised by excessive output of urine and thirst. It is due to a failure of function of the posterior part of the pituitary gland (q.v.) due to disease of that organ. One of the functions of the posterior pituitary gland is to secrete a hormone (the anti-diuretic hormone) which reduces the quantity of fluid output through the kidneys. *D. insipidus* may be distinguished from *D. mellitus* by the absence of sugar and the low sp. gr. of the urine. See R. D. Lawrence, *The Diabetic Life*, 1955; O. Leyton, *The Diabetic's Vade Mecum*, 1937; R. D. Lawrence, *The Diabetic A.B.C.* (11th ed.), 1955.

Diablerets, noted mt. or secondary mt. group of the Bernese Alps, Switzerland, situated between the cantons of Vaud and Valais. The highest point reaches 10,650 ft. It consists of 4 peaks composed of limestone resting on soft shale beds, which easily become disintegrated, and fall.

Diacetylmorphine, see HEROIN.

Diadom, an older word for tiara (q.v.).

Diadochi, Wars of the (323-281 bc), arose over the problem of dividing Alexander's empire among the D. (or Successors)—former generals and companions of Alexander. The chief among them were Antigonus, whose ambition was to rule the whole empire, Antipater, regent of Macedonia, Lysimachus, Seleucus, satrap of Babylon, and Ptolemy of Egypt. After Antipater's death his son, Cassander, murdered Alexander's widow, Roxana, and her infant son. Each of the D. then assumed the title of king, and the wars between them were resolved into a coalition of Seleucus, Ptolemy, Lysimachus, and Cassander against Antigonus and his son, Demetrius. Demetrius was successful in Greece, but Antigonus was finally defeated and killed at the Battle of Ipsus (301 bc). Later Cassander d., and Demetrius became king of Macedonia. Lysimachus, king of Asia Minor, was betrayed into believing his son, Agathocles, a traitor, but by murdering him he involved himself in a war with Seleucus, and was defeated and killed at Corupedium (281 bc). Ptolemy had d. in 283, and Seleucus, the last of the D., relinquished his possessions, but was assassinated.

Diadumenianus, Marcus Opilius Av-

tonius, son of the Rom. emperor Macrinus (q.v.). In AD 218 his father conferred upon him the title of Caesar; both were put to death by Elagabalus (q.v.) in June of the same year. Owing to his title, which occurs on certain coins, D. is sometimes reckoned among the emperors.

Diageotropism, see GEOTROPISM.

Diaghilev, Serge Pavlovich (1872-1929), impresario of Russian ballet, b. Perm in Novgorod prov. He studied law and music, and especially interested himself in old Russian art. In 1899 he founded the magazine *Mir Iskusstva* (the World of Art). D. held an exhibition of Russian painting and sculpture in Paris in 1906. In 1908 he was in Paris giving concerts and opera, but it was his return there in 1909 to present a mixed season of opera and ballet that first gained him international renown. Thereafter he devoted himself exclusively to presenting ballet, and his company had a tremendous influence on the development not only of ballet but also of the allied arts as a result of the collaboration of such artists as Benois, Bakst, Derain, Picasso, and Cocteau, and musicians like Stravinsky, Auric, Satie, and Milhaud. During the existence of the D. Ballet (1909-29) he raised ballet to a major theatrical art, and the lasting nature of his legacy can be detected in every important ballet company to-day outside Russia. He d. in Venice, 1929. See lives by A. Haskell, 1935; S. Lifar, 1940; S. Grigoriev, *The Diaghilev Ballet*, 1953.

Diagnosis, in medicine, the methods employed to identify a disease.

Diagonal Scale, a mathematical scale consisting of a set of parallel lines drawn on a ruler with other lines crossing them at right angles and at equal distances from each other. The extreme div. of the divs. so formed is then further subdivided into a number of equal parts, and other lines drawn obliquely across the parallels through the points of intersection. With the aid of compasses, lines can be laid down by such a scale of any required length.

Diagoras, of Melos, surnamed the Atheist, a Gk poet and sophist of the 5th cent. bc, said to have been a pupil of Democritus of Abdera. He was accused of impiety, more especially of criticising the Mysteries, and in 411 bc was condemned to death in Athens (Aristophanes, *Clouds*, 830). He fled to Corinth, and probably d. there. Besides his work on the Mysteries, he wrote hymns, dithyrambs, and some philosophical treatises, none of which is extant.

Diagram, in mathematics, is a figure serving to illustrate a definition or to aid in the proof of a proposition. In its more general sense it is a drawing to illustrate the structure of scientific apparatus, engines, machines, buildings, and so on, as opposed to a 'picture' to which emotional significance or artistic value is attached. The value of a D. lies in its power of conveying essential information at a glance; when the D. is drawn to scale, this information may be quantitative as well as qualitative. Weather charts, temp.

and pressure curves, road maps, etc., are very largely diagrammatic. An *indicator diagram* shows the effective work done by an engine. Constitutional formulae in chem. are conventionalised D.s of what is believed to be the corresponding molecular structure. Biological D.s bring out the features of biological importance in the objects drawn.

'*Dial, The*,' literary organ of the Transcendental Club of New England, in the formation of which Emerson took a leading part. Sarah Margaret Fuller (q.v.) was the first editor after it was founded in 1840, with George Ripley as assistant editor. It was a periodical for cultured readers, discussed questions of theology, philosophy, music, art, and letters, and its pages contained much verse. Among its best-known contributors were Emerson, Thoreau, and Bronson Alcott. The public, however, disliked the peculiar and abstruse opinions, especially those in the *Orphic Sayings* of Alcott, and though Emerson succeeded in keeping the paper alive for a short while after Sarah Fuller relinquished it, it ceased to exist in 1844.

A modern jour. of the same name was founded at Chicago in 1880. First a monthly, then a fortnightly, it was an important organ of literary criticism, having among its contributors Conrad Aiken, Randolph Bourne, and Van Wyck Brooks. In 1918 it moved to New York, and became the leading literary periodical to support modern artistic movements. It printed work of distinguished authors from many countries, including Thomas Mann, T. S. Elliot, James Stephens, and Paul Morand. It was ed. by Marianne Moore (q.v.) after 1926. In 1929 it ceased pub.

Dialect (Gk *dialekto*s, conversation, or manner of speaking), in its widest sense the name applied to forms of speech springing from a common root. But the term is popularly used to express the divergence of some local form of speech from the generally accepted or 'literary' form. It is quite wrong to speak of such local forms as 'corruptions' of the accepted forms. The anc. Gk tongue was divided into Attic, Doric, Ionic, Aeolic, and Achaean D.s. Modern Greek is derived from the Attic form, in which the works of Thucydides were written, while Herodotus wrote in Ionic; no one will say that the tongue of Herodotus was a corruption of that of Thucydides. The origin of D. is not in corruption at all, but is the result of descent from a different form and of different developments: in old England, as in old Greece, the country was inhabited by different races; the dispossessed Celts were driven into the mts, while the Saxons, Jutes, and Angles spread over the land. From a variety of causes the D. which survives as modern literary Eng. is the Midland, that spoken by a branch of the Anglian tribes. The D. forms are not corruptions of the Midland D.s, but the direct descendants of the Celtic, the Saxon, the Northumbrian, and other forms of speech. Eng. itself, for that matter, is merely a D. of the Teutonic

tongue, modified and enriched by Norman-Fr., Lat., and many later additions from classical and scientific sources. After the A.-S. settlement of Britain, the language of the country was roughly divided into 6 main forms of local speech, or D.s, the S. W., E., Midland, N., and Lowland Scots, again divided into many small groups, which still prevail with characteristic variants from the accepted language. Modern prov. Eng. has been carefully studied, its origin, where possible, traced, and its locality recorded in the papers of the Eng. Dialect Society (1873-96). Upon these papers Prof. Skeat, of Cambridge, largely based his Eng. dialect dictionary, the 1st vol. of which appeared in 1898. He was assisted by Prof. Wright, of Oxford, who classified the various D.s and obtained a unique collection of phonograph records to preserve the idiom, with its correct accent and intonation, of Eng. rustic speech in different localities. Sir J. A. H. Murray has done a similar work for the D.s of Lowland Scotland, in *Dialect of the Southern Counties of Scotland*, 1873. For further information, see A. J. Ellis, *Existing Phonology of English Dialects*, 1889; the works of Prince Louis-Lucien Bonaparte on Eng., Basque, Fr., and especially It. D.s; J. Winkler, 1874, for Low Ger. forms; and, for hybrid D.s, S. Haldeman, *Pennsylvania Dutch*, 1872.

Dialectic, a term in logic generally applied to verbal fencing and abstract arguments without practical value, and frequently merely the clever statement of fallacies to make them pass for truth. The term was used in the Socratic philosophy to show the inadequacy of popular beliefs; Plato used it for the highest kind of thought connecting itself with the true nature or idea of things, while Aristotle limited it to a probable deduction from probable reasoning, as opposed to a scientific or demonstrative reasoning or proof. The Stoics divided logic into 'D.' and 'rhetoric,' and from their time D. is sometimes used as synonymous with logic. In modern philosophy the name has been used in sev. senses. Hegel uses it in its original Socratic sense, while Kant uses it in general for the doctrine of fallacies, for the uselessness of the attempt of reason to overcome the principles which govern phenomena.

Diallage, one of the pyroxene group of minerals characterised by its lamellar or foliated structure. The name formerly included 'bronzite,' from which it is very hard to distinguish it. Its colour is generally brown, but sometimes grey or green, and there is a metallic lustre on the surface of the broken crystals.

Dialogue, a conversation between 2 or more persons, reported in literary form and with a greater unity and continuity of subject than characterise an ordinary conversation. When joined to action the D. becomes a drama. It has always been a favourite mode with writers who, wishing to convince their readers of the truth of an argument, present both sides of a question in the mouths of 2 characters, and conduct the conversation in such a way that one is finally convinced of the

correctness of the other. The D. is of GK origin, having been adopted by the GK philosophers as the best way of conducting their investigations and conveying their instructions to their pupils. The D.s of Socrates took the form of question and answer, so that the master by means of questions led the pupil himself to originate the ideas which he, the master, wished to convey to him. The form of D. adopted by Plato was modelled on the 'mimes,' little 2-character plays which were popular before his time, and which survive in the works of Herodas (q.v.). Plato simplified it to pure argumentative conversations, or philosophical dramas, and used the form for all his philosophical writings except the *Apologia*. One of the greatest masters of this form of literature was Lucian (2nd cent. AD), the title of whose celebrated *Dialogues of the Dead* was borrowed by 2 great Fr. masters of the form, Fontenelle (1683) and Fénelon (1712), in their *Dialogues des Morts*. It has also been used by Erasmus in Latin; Wieland, Herder, and Lessing among the Germans; Petrarch, Tasso, and Leopardi among the Italians. In England the most famous writers of non-dramatic D. are Berkeley in *Hylas and Philonous*, 1713, and Landor in his *Imaginary Conversations*, 1821-5. See G. Lowes Dickinson, *Plato and his Dialogues*, 1947; A. R. Bellinger, *Lucian's Dramatic Technique*, 1938.

Dialysis, term in chem. for the process discovered by Thomas Graham (1804-69), by which 'colloids,' such as silicic acid, can be separated from 'crystalline' substances, such as salt or hydrochloric acid. He found that if a solution of a crystalline substance, salt for instance, were placed in a 'dialyser,' a vessel provided with a bottom made of parchment or animal membrane, and the dialyser placed in a larger vessel of water, the salt would permeate the parchment, whereas a similar solution of a 'colloid' would not diffuse, remaining intact in the original solution. The process is performed more rapidly with an increase of temp.

Diamagnetic, see INDUCTION, MAGNETIC.

Diamantina, until 1838 **Tejuco**, mining tn in Minas Gerais state, Brazil, built on a steep hillside some 4140 ft above sea-level. It is the centre of a diamond dist. and gold is mined in its neighbourhood. It has tanning and textile industries. D. is the seat of a bishopric, and is the centre of a large commercial dist., famous for its wealth during the 18th-cent. diamond rush. There is a fine cathedral. Pop. 9700.

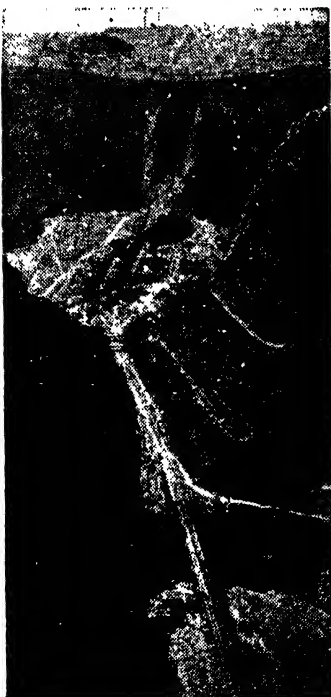
Diamantina, riv. of Australia, also called Mueller's Creek, flowing from the high ground in the N. of central Queensland in a S.-westerly direction into S. Australia. In the dry seasons it dries up in the interior, but during the rains it flows into the N. end of Lake Eyre.

Diameter, a term in geometry for the line which passes through the centre of a conic section or any other figure, and which is terminated at either extreme by the curve.

Diamond, a form of crystallised carbon

of very high value, which is usually regarded as the most precious of all stones. It is, however, not so valuable as the ruby. The D. is always found in crystals of the cubical system, and is found most frequently in the form of octahedrons, or rhombic dodecahedrons. The crystals are strongly striated and the cleavage is perfect. Contrary to general opinion, the D. is rather brittle and can be injured by the slightest fall. The stone has a lustre peculiarly its own, termed adamantine lustre. It has high refractive powers, the index for refraction being 2.4, and the angle of total reflection about 25 degrees. The stone is highly phosphorescent, and will, after exposure to brilliant light, emit the rays to which it has been exposed and become self-luminous in the dark. Its sp. gr. is just over 3.5, and its hardness is far greater than that of any other stone, and is indicated by 10 in the mineralogical scale. The chemical character of the D. was for a long time uncertain. During the 17th cent. it was held to be inflammable. Robert Boyle proved that when subjected to a high temp. part of it was dissipated, and finally, at the expense of Duke Cosimo of Tuscany, the Florentines proved it was combustible. Lavoisier later showed that the product was carbonic acid gas; finally, Smithson Tennant (1761-1815) demonstrated that the amount of carbonic acid gas produced equalled oxygen consumed. The composition of the D. was therefore determined to be pure carbon in a crystallised form. Experiments have also been made as to the action of heat on D.s, and Gustaf Rose showed that under certain conditions D.s when subjected to a great heat were gradually converted into graphite. For a long time India was regarded as the only D.-producing country, and it is certain that the Indian gem was the only stone known to the ancients. The chief D. dists. of India are: the Golconda dist. in Andhra Pradesh, the Sambalpur mines of Orissa, and in Bundelcund (q.v.). The D. production of India at the present time is not large. Brazil was not regarded as a great D.-producing country until 1727, when the D.s were first noticed, having been used by the natives as counters in certain card games. These D.s were, without reason, for a long time regarded as inferior to the stones of India. Formerly the state of Minas in Brazil was a famous centre of D. production, and it has been estimated that stones to the value of £12,000,000 have been taken from the D. fields since 1727. The states of Matto Grosso, Goyaz, and Bahia are now the chief centres of D. mining in Brazil, but the industry has suffered since the advent of mining in S. Africa. The black D. of Brazil is, however, largely used for D. drills. In Europe D.s have been discovered, but in no great quantity. Australia has also produced some, but these again are not of great importance. The most important D. fields are those of the Belgian Congo and of Kimberley, S. Africa, which were discovered quite by accident. Chief among the Kimberley mines are those of the De Beer, the Du

Toit's Pan and the Ragfontein, all controlled by the D. Corporation, Ltd., also the largest buyer of rough stones in the world. The largest individual mine, however, is the Mwaduli, in Tanganyika (owned by Dr J. T. Williamson), which employs 5000 Africans and 100 Europeans, and was discovered in 1940. In the S. African D. mines the average labour employed, including alluvial digging, was (1953) about 3193 Europeans and 12,300 natives and coloured. There are



S. African Gov.

PREMIER DIAMOND MINE, PRETORIA

also valuable D. mines in Ghana, the Congo, Sierra Leone, and Angola. The most recent returns give the ann. production in metric carats (goms and industrial stones) as follows (1946): Congo, 6,033,000; Gold Coast, 700,000; Union of S. Africa, 1,281,787; Sierra Leone, 559,229; Angola, 808,000; Tanganyika, 119,446; Brazil, 325,000. The value of D.s owned throughout the world was stated to be £600,000,000 in 1918, one-half being owned by residents in the U.S.A. A number of the D.s in existence at the present time have remarkable histories. The largest of all known D.s is the

Cullinan D. found near Pretoria early in 1905. It weighs 3032 carats, or more than 3 times the weight of any other known D. It is at present in the Brit. regalia. Another fine stone is the Orloff D. which figured in the sceptre of the Russian regalia. It was purchased by Count Orloff for Catherine II of Russia, and is supposed to have been the eye of an Indian idol. The Pitt D. holds the second place. It was brought back from India by the grandfather of the famous Eng. statesman, Wm Pitt, and sold by him to the Regent Orleans for £130,000. It is held to be the most perfect D. in the world. Amongst other famous stones may be mentioned the Florentine (133 carats) and the Koh-i-noor, the most famous of all the stones belonging to the Brit. Crown. This stone, which weighs 106·5 carats, has a long and romantic hist., and came into the possession of the Brit. Crown in 1850 after the annexation of the Punjab. Others are the Hope Blue and the Star of the South. The 'Vargas' D. (named after the President of Brazil, and said to be the third largest known in the world) was found in Minas Gerais in Oct. 1938. It was sold to a Dutch firm at 700,000 guilders. The chief centres of the D. cutting and polishing trade are Antwerp, Amsterdam, and Palestine. When the Low Countries were invaded by Germany early in the Second World War, machinery and skilled craftsmen were brought to England at the last moment and a D.-cutting industry was estab. there. Cutting and polishing are still done in London, though the majority of finished stones are imported. D.s are much used in jewellery manu. It is estimated that 350 tons of gravel and rock must be mined and brought to the surface to produce a fine cut gem of 1 carat. Gemstones are always priced per carat; a normal stone of 1 carat measures about 6·2 mm. diameter by 4·05 mm. deep. Very small stones having all the properties of a true D. have been produced in the laboratory (see GEMS). See B. W. Anderson, *Gem Testing for Jewellers*, 1942; R. Webster, *Gemmologists' Compendium*, 1947; F. J. Sperisen, *Art of the Lapidary* (U.S.A.), 1950; A. Selwyn, *Retail Jeweller's Handbook*, 1955.

Diamond Necklace. The, piece of jewellery made in Paris by the court jewellers, Boehmer and Bassenge, in 1775, and allegedly intended for Madame du Barry, the favourite of Louis XV. Louis XV d. before the necklace was completed, and its price was beyond the reach of any purchaser (1,600,000 livres). Cardinal de Rohan, duped by an adventuress (calling herself Comtesse de Lamotte-Valois and pretending to be in the service of the queen) into believing that Marie Antoinette had expressed a desire for the necklace, bought it on credit. De Lamotte then obtained the necklace from the cardinal, on the pretext that she was going to give it to the queen, and then her husband went abroad and sold the separate D.s. When the first instalment on the necklace became due, the jeweller obtained an

interview with the queen and the whole truth was exposed. De Rohan was thrown into the Bastille, but acquitted after a sensational trial. De Lamotte and her husband were captured, the former branded as a thief, and the latter sent to the galleys for life. The question whether the queen and de Rohan were entirely innocent in the matter and merely the dupes of de Lamotte was much debated, and resulted in an increased unpopularity for the queen. In her *Memoirs* de Lamotte accused Marie Antoinette of being deeply implicated in the affair. See T. Carlyle, *Miscellanies*, 'The Diamond Necklace,' 1837; A. Lang, *Historical Mysteries*, 1904; F. Funck-Brentano, *The Diamond Necklace* (Eng. trans.), 1911.

Diana, anct It. goddess; probably in origin a woodland deity who became associated with the peasant family, and thus became a fertility goddess. Perhaps as a result of Etruscan influence, she was early identified with the Gk Artemis (q.v.), many of whose attributes she consequently assumed. The most famous shrine of D. was at Aricia, in the Alban hills, where she was worshipped with curious rites in conjunction with a woodland god called Virbius. Her cult was believed to have been introduced upon the Aventine at Rome by Servius Tullius.

Diane de France, Duchesse de Montmorency et d'Angoulême (1538-1619), natural daughter of Henry II and Filippa Duca. She was twice married, first to Orazio Farnese, 2nd son of the duke of Parma, and then to François, Maréchal de Montmorency. She was formally legitimised in 1547. She had great influence with her brother Henry III, whom she succeeded in reconciling to Henry of Navarre.

Diane de Poitiers (1499-1566), mistress of Henry II of France. In 1515 she married Louis de Brézé, Grand Seneschal of Normandy. Left a widow in 1531, she gained the affections of the king's son. On his accession to the throne as Henry II, in 1547, she exercised almost unlimited power, and was created by him Duchesse de Valentinois. On the king's death she was expelled from court by Catherine de' Medici, and d. at the Château d'Anet.

Dianium, see DENIA.

Dianthus, a Caryophyllaceae genus of about 300 species which occur in temperate parts of Europe, Asia, S. Africa, and N. America; ann. or perennial herbs; distinguished from allied genera by the bracts under the calyx. *D. caryophyllus* is the progenitor of carnations (q.v.); *D. armeria*, the native Deptford pink; *D. barbatus*, the sweet william; *D. chinensis*, the Indian or Chinese pink; *D. deltoideus*, the maiden pink; *D. granatopolitanus*, the Cheddar pink; *D. plumarius*, parent of garden pinks; and *D. knappii*, a yellow pink. There are many hybrids of which *D. × alwoodii* is important, and alpine pink species.

Diapason, an anct Gk term for the musical interval of an octave. The name is given to the 2 foundation stops of an organ, the open and stopped D.; it is

used by the Fr. in 'diapason normal' as equivalent to 'pitch.'

Diapensiaceae, a family of dicotyledonous plants found in cold regions. Chief genera are *Diapensia*, *Galar*, and *Shortia*.

Diaper: 1. In textile fabrics, the name given originally to a rich silken fabric with a pattern of the same colour embroidered on it. It is now restricted to linen or cotton material with a simple pattern woven in it, generally of a geometrical design, and used for towels.

2. In Gothic architecture, a small pattern of a conventional nature, generally geometrical, but sometimes floral in design, used for the surface decoration of stone. The idea was probably taken from the diapered pattern of Byzantine silks, and was also used in glass painting and illuminated manuscripts. There are good examples at Westminster Abbey and at Bayeux Cathedral.

Diaphoretic, measures taken to promote perspiration. The function of perspiration is to carry away waste products of metabolism through the skin and to keep the body cool. In some feverish conditions perspiration often ceases, so that the skin becomes dry and the internal temp. is not prevented from rising. It is advisable in some of these cases to promote perspiration by means of hot air, as in the Turkish bath; hot vapour, as in the Russian bath; by taking hot drinks and by diaphoretic drugs.

Diaphragm, a partition with a hole in it which is used in landscape and portrait lenses as well as all optical instruments, such as the telescope, microscope, etc. It controls the amount of light passing through the lens.

Diaphragm, or **Midriff**, the partition which divides the thorax from the abdomen. It is in the form of a muscular dome with a central tendon; it is concave towards the abdomen and convex towards the thorax, where the central tendon forms a floor for the heart. It arises in front from the posterior surface of the ensiform cartilage; at the side from cartilages connected with the lower 6 ribs; behind from the lumbar vertebrae. It has 3 large openings: one for the oesophagus and pneumogastric nerves, one for the aorta, thoracic duct, and large azygos vein, and one for the inferior vena cava. When the muscular fibres of the margin contract, the convexity of the D. is lessened and the size of the thorax is increased, intra-thoracic pressure being thereby diminished. Air flows in to fill up the additional space, and this, together with other muscular movements, comprises the action of inspiration.

Diarmid, or **Diarmait**, the name given to 3 Irish kings: the first was ruler over Níu Neill, and his father was called Fergus MacCabeill. He was slain in 555 by Columcille's kinsmen in revenge for his having hanged the latter. D. the second reigned from 658 to 665, whilst the third reigned over Leinster.

Diarrhoea, frequent loose or watery evacuations of the bowel. D. is a symptom and not a disease in itself. It occurs when peristalsis (q.v.) is increased,

or when fat digestion is faulty, or in inflammatory conditions of the intestinal mucous membrane, with consequent excessive secretion of mucous (see ENTERITIS and COLITIS). Sometimes 2 or all 3 of these factors operate at the same time.

Infantile D., see GASTROENTERITIS.

Diarthrosis, term in anatomy applied to joints which have the power of free movement, such as the socket joint of the hip, or the hinge joint of the elbow.

Diary (Lat. *diarium*, from *dies*, a day), the book in which a daily record of events or observations made by an individual is written. The 'ephemeris' of the Greeks, which was the original name of the 'diarium,' consisted usually of memoranda of military records, tables of the heavenly bodies, or money accounts; it was not until after the Renaissance that the D. came to have any literary value. Since then it has often been of service to the historian, not only in its supply of facts often unrecorded in historical chronicles, but as a picture of character and of the daily life of its writer's time. Among the most famous D.s of Eng. literature are those of John Evelyn for 1624-1706; Samuel Pepys (1660-69), perhaps the most valuable and minute record in existence; Swift's *Journal to Stella*, 1710-13; John Wesley's *Journal*, 1735-90; and Fanny Burney's *Diary*, 1778-1840. The D. of the Russian, Marie Bashkirtseff, created a great sensation in 1887, and that of Jules and Edmond de Goncourt in Paris in 1888. See A. Ponsonby, *English Diaries*, 1923.

Diastase, a species of ferment found in barley, oats, wheat, and potatoes after germination. It can be procured by placing a certain quantity of freshly germinated barley or ground malt in a mixture of 3 parts of water and 1 of alcohol, heated to 113° F. When obtained separately D. is a solid, white, tasteless substance, soluble in water and in weak alcohol. In solution at a temp. of 150° F., D. is powerful enough to break up starch, first into dextrin and then into sugar, particularly the variety called 'Maltose.'

Diastole, see HEART.

Diastylis, the typical genus of the Diastylidae, a crustacean of the order Cumacea. *D. arenarius*, about one-fifth of an in. long, is found on the coasts of Georgia and Florida.

Diathesis, a constitutional predisposition to a particular disease. The term is particularly applied to inherited or congenital predispositions which may, however, become observable only at a late period of life. Increasing knowledge of the causes of disease and of natural resistance has led to some extent to the discarding of the older theories of D. Thus a person contracts tuberculosis not necessarily because of a constitutional predisposition but from exposure to infection at a time of lowered resistance. The same applies with rheumatic infections. Cancer often runs in families, but whether from inherited predisposition or from other factors, such as exposure to similar hazards, cannot be proved until more is known of the aetiology of the disease. The body is endowed with an

ability to resist the stresses of faulty function whether these are induced from within or are the effects of external agencies. There is no doubt that some inherit weaker powers of resistance than others, while the normal power of resistance of others is strained by an inherited functional fault. An inherited insufficiency of the islets of Langerhans, giving rise in due course to diabetes, is an example of the latter. Such a person might be said to have a diabetic D.

Diatomite, rock composed almost entirely of silica, SiO₂, and made up of the accumulated shells of the microscopic plants known as diatoms. Diatomaceous ooze, contaminated by inorganic mud, is formed on the floor of the deep sea in the polar regions. Pure D. is deposited on the floors of some fresh-water lakes.

Diatoms, microscopic plant organisms of the Diatomaceae, a family of one-celled algae with siliceous cell-walls. These minute plants are invisible to the naked eye, and were first discovered by Leeuwenhoek in 1702. Since then no fewer than 10,000 species have been discovered. The D. exhibit a great variety of form, being either circular, disk-shaped, oval, or cuneate. They thrive best where they can obtain plenty of light and moisture, and are to be found in shallow seas and mixed with other organisms on the surface of moist rocks.

Diatonic, musical term derived from the Gk use. In modern music it denotes the notes and intervals of the normal major or minor scale, and the harmonies built on them, as distinguished from the 'chromatic.'

Diavolo, Fra (1771-1806), nickname given to Michele Pezza, It. brigand and patriot, a famous outlaw, originally a monk, appointed by Cardinal Ruffo to help recover Naples, which had been invaded by the Fr. in 1799. D. became one of the leaders of the 'bands of the Holy Faith'; these bands consisted of peasants, convicts, and brigands, and they were a source of considerable trouble to the Fr. Upon the accession of Joseph Bonaparte to the throne of Naples, a price was placed upon D.'s head, and he was eventually captured and shot. Auber's opera *Fra Diavolo* has immortalised the name of the brigand.

Diaz, Armando (1861-1928), It. soldier, b. Naples. Colonel in Tripoli war. Major-general, 1914. Director of military operations on outbreak of First World War. Lieutenant-general, 1916. In 1917 commanded 23rd Corps on the Carso. After Caporetto, succeeded Cadorna as chief of staff. Victorious at Vittorio Veneto, Oct.-Nov. 1918. After armistice, inspector-general. Made Duca della Vittoria, 1921. Minister of war on estab. of Fascism. Resigned in 1924 with new rank of marshal. D. in Milan. See life by Gen. A. Baldini, 1935.

Diaz (or **Novaes**, or **Dias**), **Bartholomeu** (c. 1455-1500), Portuguese navigator, famous chiefly for his discovery of the Cape of Good Hope. He resided at the court of King John II, where he came into contact with many scientific men.

Eager for adventures, he was sent by the king on a further voyage of discovery along the W. African coast. On this journey he rounded the Cape of Good Hope and discovered Algoa Bay; he succeeded in finding 1260 m. of unexplored coast, but met with little recognition for his pains. He accompanied Vasco da Gama on one of his voyages.

Diaz, José de la Cruz Porfirio (1830-1915), president of the Rep. of Mexico, b. Oaxaca, 6th child and eldest surviving son of José de la Cruz Diaz, a labourer, probably of mixed Sp. and aboriginal strain, who d. in 1833. Porfirio's mother was half-blood Indian. At 15 he was placed in the local seminary to train for the priesthood; but in 1849 he refused to take orders, entering the legal profession instead. Took part in the 'War of Reform' set on foot by Benito Juárez, governor of Oaxaca. Also took part in resisting the invasion of the Fr. and the Emperor Maximilian, and succeeded in entering Mexico City in 1867, when he resigned his command of the army and retired to his own native city. Disturbances soon arose in Mexico City, and at last D. was forced to come and set matters right. He entered Mexico City triumphantly in 1876, and was unanimously elected president, which post he held for 8 terms; but in April 1911 he was deposed by the successful revolution of Maderó, who succeeded him in the presidency. He d. in Paris.

Diaz, Don Juan Martin, see EMPECINADO.

Diaz de Gámez, Gutierre (c. 1379-1450), Sp. writer. His prin. work is *El Victorial*, first pub. with omissions in 1782 under the title *Crónica de don Pero Niño*.

Diaz de la Peña, Narcisse Virgile (1808-1876), Fr. painter, b. Bordeaux of Sp. parents. He first began painting on porcelain in a studio at Sèvres, and from 1840 painted landscapes in the forest of Fontainebleau with others of the Barbizon group. Among his masterpieces may be included 'La Fée aux Perles,' 'Sunset in the Forest,' and 'The Storm.'

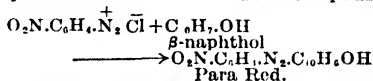
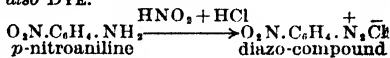
Diaz del Castillo, Bernal (1498-1593), b. Medina del Campo, wrote a most faithful account of the conquest of Mexico under Hernán Cortés. Was himself one of the small band of faithful followers, and was consequently an eye-witness of the deeds of glory and brigandage he narrated.

Diazo-compounds, a family of carbon compounds the first of which to be discovered was obtained by Peter Griess of Burton-on-Trent in 1858. They are characterised by the presence in them of the $-N_2-$ group of atoms (hence the name, from the Fr. *azote*, nitrogen). The

constitution of this group is $-N=N-$ and the compounds are known as *diazonium* compounds. D. are most common in the aromatic (q.v.) sense, but aliphatic (q.v.) examples are known. Aromatic D. are prepared by the action of nitrous acid upon cooled acidified solutions of primary aromatic amines. In the solid state they are frequently very explosive, but this instability is less marked in solution, though even here they enter readily into

numerous reactions and are therefore of great importance in synthetic chem. They are also used largely in the manuf. of drugs and azo-dyes.

Diazotisation, the reaction of a primary aromatic amine, at a low temp., with nitrous acid in the presence of a mineral acid, leading to the formation of a diazo-compound. Discovered in 1858 by Peter Griess, this reaction is of great importance in dyestuff chem., since diazo-compounds will readily react with, e.g., naphthols to give azo-dyes. This is known as the coupling reaction. An example of D. and coupling is the formation of Para Red from *p*-nitroaniline and β -naphthol. See also DYE.



Dibdin, Charles (1745-1814), actor, dramatist, and composer, principally remembered to-day as a writer of sea-songs. He received his musical training as a chorister at Winchester Cathedral, but was otherwise self-taught. He had various theatre engagements, but after 1789 he made his success with table entertainments, at which he sang his own songs. Between 1764 and 1811 he produced a vast number of musical plays, for 46 of which he wrote the words as well. The tunes of the sea-songs, of which *Tom Bowling* is the most famous, have an excellent lilt and the words have found their way into anthologies.

Dibdin, Charles Isaac Mungo (1768-1833), dramatist, b. London, an illegitimate son of Charles D. (q.v.). Known as Charles D. the younger, he produced his plays for the most part at Sadler's Wells, of which theatre he was proprietor. He wrote over 200 pieces, including melodramas, farces, and pantomimes, but only a few were printed. He also wrote a *History of the London Theatres*, 1826.

Dibdin, L. O., see CHANT, L. O.

Dibdin, Thomas Frognall (1776-1847), Brit. bibliographer, b. Calcutta, nephew of Charles Dibdin (q.v.). Orphaned at the age of 4, he came to England and was adopted by an uncle, who sent him to St John's College, Oxford. His works include *Introduction to the Knowledge of Rare and Valuable Editions of the Greek and Roman Classics*, 1802, *The Bibliomania or Book Madness*, 1809, *Bibliotheca Spenceriana*, 1814-15, *The Library Companion*, 1824, *Reminiscences of a Literary Life*, 1836, and *A Bibliographical, Antiquarian, and Picturesque Tour in the Northern Counties of England and Scotland*, 1838. The famous Roxburghe Institute was founded by him (see BOOK-CLUBS).

Dibdin, Thomas John (1771-1841), illegitimate son of Charles D. (q.v.), and, like his father, a writer of plays and songs, of which he is said to have written about 200 and 2000 respectively; but he was not a composer. The best-known among his works were: *The Cabinet* (an opera), 1805;

Past Ten O'Clock (a farce); the pantomime of *Mother Goose*; *The High-metled Racer*, an equestrian piece for Astley's. He pub. his *Reminiscences* in 1837.

Dibon, or **Dhibān**, cap. of the Moabites, 840 bc, near the shore of the Dead Sea, renowned for the discovery of the famous Moabite stone of King Mesha.

Dibothriocephalus **Tapeworm**, or **Bothriocephalus**, genus of Cestoda, or tapeworms, which belongs to the *Platyhelminthes*. The species have 2 weak and flat suckers, the body is segmented, and the head has no hooks. *D. latus* is parasitic on man, and as its first stage occurs in fish it is found in countries where fish is not thoroughly cooked, as in Russia, Poland, Switzerland, and S. France. It may attain a length of 30 ft. *D. liquidoides* occurs in China and Japan and grows to a length of 8 in.

Dibranchiata, order of molluscs including all existing Cephalopoda except the pearly nautilus; it is subdivided into the Decapoda, with 8 arms and 2 tentacles, e.g. cuttle fish; and Octopoda, with 8 arms only.

Dicaearchus (fl. c. 320 bc), Gk peripatetic philosopher, pupil of Aristotle and a friend of Theophrastus. He was b. at Messina in Sicily. He wrote on hist., geography, and philosophy, but only a few fragments of his works remain. The most important of his writings were *Life in Greece*, discussing the moral, social, and political condition of the people, and *Lebiamor*, in which he tried to prove that the soul is mortal. The best ed. of the fragments of his work is by M. Fuhr, 1841.

Dicast, in Attic law a juror. Six thousand were chosen annually from citizens of 30 years of age and upwards, and they served in panels called dicasteries. D.s were judges of both law and fact; from the time of Pericles they were paid for their services. The manner in which they were swayed by party feeling and personal prejudice is referred to by Aristophanes in *The Wasps*.

Dice is the plural of the word 'die,' and comes from the Lat. *dare*, to give. They are small ivory or bone cubes, the 6 sides of which are marked with black dots from 1 to 6. These dots are so arranged that any 2 opposite sides on the cube always make up the number 7. Two D. are called a pair. They are used chiefly for gambling purposes, but they are also employed in backgammon and other games. D. boxes were made in ant. times of leather or wood or some equally suitable material, and so constructed that no trickery could be resorted to in the throwing of the D. Palamades is said to have invented D. about the year 1244 bc, but we have still earlier evidences of their use in Egyptian times. In the Brit. Museum, in one of the cases in the Egyptian gallery, is to be seen an ivory astragal, which belonged to the Queen Hatesu, 1600 bc. The astragal, or knuckle, or hucklebone, was the name given to the bone in the hind leg of cloven-footed animals such as the sheep, goat, or antelope. D. corresponding to ours have also been discovered at Thebes. The astragal undoubtedly corresponds to the

hucklebone which was used in the game of 'chance bone,' which was played by children in former times. Again, this game of 'chance bone' finds a striking parallel in the game of hazard played by means of 2 D., in which the player who first throws is called caster, while his opponent is called setter. This game with D. was declared to be illegal in the reign of George II. By 13 Geo. 2. c. 19, 'all games invented or to be invented with one or more die or dice' were forbidden, backgammon or games on a backgammon board being sanctioned. The reason of this prohibition was not far to seek: D. throwing had singular attractions for a certain class of swindlers, and it was a very common practice to use loaded D. This trick consisted in slightly weighting the sides of the D. bearing a small number. Gambling has existed among all nations in some form or another; the Gks and the Roms. made use of the astragal or talus, and loaded D. have been unearthed in Pompeii. The use of D. in England can be traced back to the earliest times, when the Britons learnt the practice of gambling from their conquerors the Roms. and the N. nations.

The most popular modern D. game is the Amer. one of 'craps'. Each player stakes. The first to throw may back himself against any or all of the stakes; he then rolls 2 D., scoring a 'natural' and winning the stakes if their sum is 7 or 11. If their sum is 2, 3 or 12 he scores a 'crap' and loses. Any other number is a 'point' and the player rolls until he either rolls the same number again, in which case he wins, or a 7, in which case he loses.

There are sev. games played with 5 poker D., each inscribed A, K, Q, J, 10, 9. These include 'aces' (each player rolls all 5 D. at once, laying aside each ace as it appears, and continuing to roll the remaining D. until he has scored 5 aces, when the other players follow; 5 aces in fewest throws wins): 'D. poker' (with a scoring system based on the card game) and 'liar D.' (in which the 5 D. are rolled, hidden, called truly or falsely and passed on, unseen by the receiver, who can accept or challenge the call. If he accepts he must call higher. If he challenges and the caller exposes the combination he called or a higher one, the challenger pays; if the caller exposes a lower combination than he announced, the caller pays. The values of combinations are as in poker.)

Dicentra, genus of Papaveraceae, consists of 15 species of N. Amer. and Asiatic herbaceous perennials. Favourite garden species are Amer. *D. cucullaria*, or Dutchman's breeches; *D. formosa*, and *D. oregana*; and Asiatic *D. spectabilis*, bleeding heart.

Dicey, Albert Venn (1835-1922), jurist, b. Claybrooke. In 1854 he entered Balliol College, Oxford, and was called to the Bar 1863. In 1890 he was appointed Q.C. His prin. works are: *Lectures Introductory to the Study of the Law of the Constitution*, 1885, *England's Case against Home Rule*, 1886, *Lectures on the Relation between Law and Public Opinion in*

England during the Nineteenth Century, 1905.

Dichlorodiphenyltrichloroethane, commonly known as D.D.T., a synthetic insecticide of the formula $\text{C}_{12}\text{H}_7\text{Cl}_5$ ($\text{C}_6\text{H}_4\text{Cl}_2$). It was first prepared in 1874 but its insecticidal powers were not observed until 1939. D.D.T. was widely used during the Second World War and was instrumental in preventing or checking typhus and other insect-carried diseases. It still finds extensive employment, but is being superseded by even more powerful insecticides such as Gammaxane (q.v.).

Dicholophus, see CARIAMA.

Dichroism, a property possessed by some doubly refracting crystalline substances of appearing of different colours when viewed in polarised light, the difference of colour depending upon the direction in which the luminous vibrations take place. The D. of crystals can be observed or tested by means of a simple instrument called a dichroscope or 'dichroscope.' It is simply a cleavage rhombohedron of Iceland spar with a weak magnifying lens. The crystal is held in a good light opposite one end of the instrument and on looking through it 2 images of the square hole are seen just touching each other. If the crystal is dichroic these will be of different colours and the colours will change if the dichroscope is rotated between the fingers. The most remarkable dichroic substances are the magnesian mica from Vesuvius, the tourmaline and ripidolite, also the sapphire and ruby. The phenomena of D. are best seen in crystals with 2 axes of double refraction, notably in iolite which crystallises in 6- or 12-sided prisms; these prisms, when seen along the axis, are of a deep blue colour, but when viewed in a direct-on perpendicular to it assume a yellowish-brown colour. Tourmaline is another notable example, being blood-red when viewed along the axis, but yellowish-green when viewed at right angles to it.

Dick, James (1743-1828), philanthropist, b. Forres, Morayshire. At the age of 19 he went to the W. Indies, where he acquired a fortune, the chief portion of which he left for the benefit of parochial schoolmasters of Moray, Banff, and Aberdeen. The 'Dick Bequest' was reorganised in 1890, and placed under the management of 13 governors.

Dick, James (1823-1902), b. Kilmarnock, Ayrshire. He invented gutta-percha boots, and with his brother, Robert, set up a factory at Greenhead, Glasgow, for the purpose of making and selling boots and shoes. He also manuf. the balata belts which were used by the gold diggers in Johannesburg. He reaped a fortune, and gave a park to Glasgow and the Elmbank Institute to Kilmarnock, besides other benefactions.

Dick, Sir William Reid (1879-), sculptor, b. Glasgow. He studied at the Glasgow School of Art and in London, and first exhibited at the Royal Academy in 1908. In 1933 he became president of the Royal Society of Brit. Sculptors, and from 1934-41 he was a trustee of the Tate Gallery. His work includes a large

number of portrait heads and busts, notably the bust of King George V in the Mansion House, London, and of Lord Kitchener in St Paul's Cathedral, also King George VI, and Mr (now Sir) Winston Churchill. Of other work by him mention must be made of his Bronze Eagle for the R.A.F. Memorial in London, the Lion on the Menin Gate at Ypres, and the statue of President Roosevelt in Grosvenor Square, London. His statue of King George V stands in Westminster, and at Coventry there is an equestrian statue of Lady Godiva by him. Since 1923 he has been a member of the Royal Fine Art Commission; K.C.V.O., 1935; King's Sculptor in Ordinary for Scotland since 1938.

Dickens, Charles John Huffam (1812-1870), novelist, b. Portsea, a dist. of Portsmouth (the house at which he was born was opened as a D. Museum in 1904). His father, John D., a clerk in the navy pay office, was then stationed at Portsmouth, where he lived in very



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precarious circumstances. Charles was the 2nd of 8 sons. In 1816 the family moved to Chatham, remaining there for some 5 years. About particular details of these early periods of his life but little is known. In *David Copperfield*, however, the sketch of David's boyhood is in many points similar to his own, and Micawber is usually recognised as a sketch of his father. His education was of a most elementary nature, but fortunately his father possessed a small collection of the works of the old novelists, Smollett, Fielding, Goldsmith, and Defoe, together with *Don Quixote* and *Gil Blas*. The family fortunes soon began to decline. The father was careless and impecunious, and the family settled in a poor part of Cunden Town. Then even the little education Charles had been getting came to an end, for his father's creditors refused to delay any longer, and consigned John D. to the Marshalsea Prison. His mother tried to support herself for a time by teaching children, and young Charles was sent to work in a blacking warehouse at Old Hungerford Stairs. The description

of this period of his life is given in *David Copperfield* with a clearness and bitterness which showed how deeply these 2 years of humiliation affected the sensitive boy. He spent Sundays with his parents at the Marshalsea. These years, however, supplied him with much of that wealth of knowledge of low life, of the street, of the prison and the poor, of which he was afterwards to make such marvellous use. In 1824 his father was enabled to pay his debts and Charles spent another 2 years at school, a private estab. at Hampstead, parodied as Salem House. In 1827 he entered the office of Mr Blackmore, a solicitor, where he remained for over a year. His early ambition was still active, and his application great. He spent hours in reading at the Brit. Museum and in mastering Gurney's shorthand. His natural powers of observation were also used to the best advantage, as his delightful sketches of legal dignitaries of all ranks clearly show. His father was still in difficulties, but Charles now managed to make his entry into journalism as a parliamentary reporter.

In 1833 he made his first appearance as a creative genius. In the *Monthly Magazine* for December of that year appeared the first of those sketches of contemporary manners collected in 1836 under the title of *Sketches by Boz*. He also made some contributions to the *Evening Chronicle*. About this time the issue of sporting novels of a humorous character, embellished with plates far more important than the books, was popular. Chapman and Hall, the publishers, were about to prepare a book of this kind dealing with the adventures of a club of Cockney sportsmen. Seymour, the famous rival of Cruikshank, had been engaged to provide the drawings, and D. was asked to write the letterpress. He pleaded his total ignorance of sport, and the plan was then changed to that of the Pickwick Club. On the suicide of Seymour, the sporting element was entirely dropped, and with 'Phiz' (Hablot K. Browne) as illustrator D. succeeded in making *The Posthumous Papers of the Pickwick Club* an immortal work. The introduction of Sam Weller marks the beginning of his success. From the advent of this character the monthly parts were awaited with feverish anxiety, and even the adverse *Quarterly Review* was compelled to admit that the whole reading world was discussing the Pickwickians. In 1837 the work appeared in book form, and in the same year the new novelist set to work on the grim satire of *Oliver Twist*. It may be noted that thus early in his career D. laid his hand to the 'novel with a purpose,' and that here, as always, he uses the method of gross caricature, making use of satire which ever remains too ludicrous to become ill-tempered, and which, however true the note of indignation may be, never loses sight of the humorous element. Here too appears the pathos, inclined to sentimentality, and the deep melodrama which was to be a fault of so much of his later work.

At the beginning of the year 1838, while

Oliver was not yet half finished, D. began the pub. of *Nicholas Nickleby*, a picturesque story pub. on the same lines as *Pickwick*, and commenced writing *Barnaby Rudge*. Much of the former is melodramatic, but some of the sketches are only a little short of his highest work. Mrs. Nickleby, partly drawn from his own mother, is one of the best characters, and the sketches of Dotheboys Hall and the travelling theatre are also noteworthy. On the completion of this work (1839) D. started a weekly periodical to be known as *Master Humphrey's Clock*, where *Pickwick* and the Wellers are again brought to life. In this periodical began *The Old Curiosity Shop*. In spite of the highly complicated plot this is one of the richest mines of Dickensian characterisation. The humorous sketches of Dick Swiveller and his bizarre surroundings are unexcelled, but, in spite of Landor and Jeffrey, the over-drawn pathos of Little Nell is almost universally condemned by critics. *Barnaby Rudge*, 1841, under the influence of Scott, appeared in the same publication. Here again the plot is complicated, and the work is also noteworthy as being, with the exception of *A Tale of Two Cities*, the only one in which D. dealt with the past. *Master Humphrey's Clock* then came to an end, and in Jan. 1842 D. started on his first Amer. tour. He was received everywhere with acclamation, so that his visit became a veritable triumph. However, he deeply offended transatlantic feeling by the pub. of *American Notes*, 1842, and on his return home he satirised Amer. democracy far more freely and effectively in *Martin Chuzzlewit*, 1843-4, which is generally regarded as his greatest humorous work since *Pickwick*. It closes the great period of his observation and external caricature. Henceforward, almost all of his good work is autobiographical. Here, however, his delineation of London, particularly at Tudgers's, forms an incomparable work, with Pecksniff, Mrs. Gamp, Betsey Prig, and the Literary Ladies. Melodrama is again present with Jonas Chuzzlewit. In 1844 he paid a long visit to Italy.

At the beginning of 1846 he took up the editorship of a newspaper, the *Daily News*, but after a few weeks relinquished this uncongenial post, and went to Switzerland, where he commenced *Dombey and Son*. This work, pub. in 1848, was a great success, and entirely re-established his fortunes. It marks, however, the beginning of his falling powers, and contains in the death of Little Paul the great monument of D.'s sentimentality. In 1849-50 appeared *David Copperfield*, favourite of D. and of most of his readers. The earlier portions are best, for here the autobiographical note is the stronger. In 1850 D. started a weekly paper, *Household Words*, designed to form a training ground for aspiring authors, which was later continued under the title of *All the Year Round*. In 1852-53 came *Bleak House*, where he satirises the Courts of Chancery. It contains the figure of Harold Skimpole, drawn from Leigh Hunt. Two years later came *Hard Times*, where D. violently

opposes the industrial doctrines of the Manchester school. It is clearer and more connected than its predecessor, but does not rank high among his works. Between these two, in 1853, had been pub. the vol. of *Christmas Stories*, containing 'A Christmas Carol,' 'The Chimes,' and other short works written at various times. To these must be ascribed much of the conventional idea of the secular or mid-Victorian Christmas, which is peculiarly English and Dickensian. It is important to notice that D. was the creator of this type, for he is generally associated with descriptions of Christmas. From 1855 to 1857 *Little Dorrit* appeared, and here the loss of the old animal spirits and the spontaneous humour is marked. By this time D. had finally taken up his residence at Gad's Hill in Kent, and an improvement is shown in *A Tale of Two Cities*, 1859, which is genuine and powerful tragedy. It is the least characteristic of all his works, and is appreciated by many who do not relish his other books. Two years later comes *Great Expectations*, which Swinburne and many other critics have judged the best of his works. His own life again furnishes many of the incidents, but the most notable thing is the improvement in technique. His mastery of the difficult art of sustaining an atmosphere is also shown in his next work, *Our Mutual Friend*, published in parts during 1864-65. In spite of brilliant effects of characterisation, as in the case of Silas Wegg, failing powers are shown here, and the work has never been a popular one. In 1858 he had begun a series of paid public readings of his works, and in 1867, under pressure of money difficulties, he continued these during a tour of America. A further series was carried out in England and Scotland in 1868. Though financially a success, they were very exhausting and injured his health. He then retired to Gad's Hill, where he engaged himself on *The Mystery of Edwin Drood*, a work which he left unfinished. He died at Gad's Hill on 9 June 1870. The letters of D. to his wife, which number 136, were donated to the Brit. Museum in 1899 by Mrs. Perugini, a daughter of D., on condition that they were not to be pub. during the lifetime of any of the children of D. The death of Sir Henry D. in 1933, following a street accident, released the museum authorities from this stipulation. The letters are now bound and available for public inspection. Other letters were ed. by Georgina Hogarth and Mamie Dickens, 1882, 1893, and by W. Dexter, 1938. See J. Foster, *Life of Charles Dickens*, 1872-4, 1928; G. K. Chesterton, *Charles Dickens*, 1906; Sir W. Robertson Nicoll, *Dickens's Own Story*, 1927; R. Strauss, *Dickens, a Portrait in Pencil*, 1928; Sir H. F. Dickens, *Memories of my Father*, 1928; E. Wagenknecht, *The Man Charles Dickens*, 1929; Osbert Sitwell, *Dickens*, 1932; Una Pope-Hennessy, *Charles Dickens*, 1945; M. Pearson, *Dickens*, 1949. See also G. Gissing, *Charles Dickens: a Critical Study*, 1898; Sir J. A. Hammerton, *The Dickens Companion*, 1910; G. K. Chesterton, *Criticisms and*

Appreciations of the Works of Charles Dickens, 1911; W. G. Wilkins (ed.), *Dickens in America*, 1911; J. W. T. Ley, *The Dickens Circle: the Novelist's Friendships*, 1919; J. B. van Amerongen, *The Actor in Dickens*, 1926; F. Delattre, *Dickens et la France*, 1927; and H. House, *The Dickens World*, 1941.

Dickens, Monica Enid (1915-), novelist, a great-granddaughter of Charles D., best known for her series of autobiographical books, *One Pair of Hands*, 1939, *One Pair of Feet*, 1942, and *My Turn to Make the Tea*, 1951. Her novels include *Mariana*, 1940; *The Fancy*, 1944; *Thursday Afternoons*, 1945; *The Happy Prisoner*, 1946; *Joy and Josephine*, 1948; *Flowers on the Grass*, 1949; *No More Meadows*, 1953; and *The Winds of Heaven*, 1955.

Dickens Fellowship. The, founded in 1902 to encourage the study and discussion of D. works, to help to remedy those social evils which would have provided subjects for exploitation by D., and to assist in the preservation of buildings associated with his name. It issues a magazine, *The Dickensian*, the 1st editor of which was R. W. Matz, who was succeeded by Walter Dexter, and (in 1945) by Leslie C. Staples. D.'s children, Sir Henry F. D. and Mrs. Kate Perugini, were both life presidents of the F., while many eminent men and women of letters to-day are members. The F. was installed in 1925 at The Dickens House, 48 Doughty Street, London, W.C.1., where D. once lived and wrote. The house was acquired by the F. as a permanent D. library and museum and is vested in a trust in which the London Co. Council, the Corporation of London, and the D. F. all participate.

Dickinson, Emily (1830-86), Amer. poetess, b. Amherst, Massachusetts of an old-estab. Massachusetts family, of original Yorks stock. Her father, Edward D., a lawyer by profession, was of stern, jealous disposition, and remained an abiding influence in E. D.'s life until his death in 1874. She was, however, much in sympathy with him. She was educ. at the Amherst Academy and the Mount Holyoke Female Seminary, and in 1854 visited Washington and Philadelphia. Soon after this, however, she became a voluntary recluse, never, save on 2 occasions, setting foot beyond her garden gate, and her renunciation is commonly supposed to have been caused by her father's opposition to her marriage. Her lover is unknown, although legend has been busy with his name, but it is now almost certainly authenticated that he was George Gould, a theological student, who 5 years after Emily's renunciation married another, and in 1862 was ordained. Having a sensitive mystical nature, E. D. composed her poetry in secret, and its existence was all but unsuspected. After her death a collection of manuscripts was discovered by her sister Lavinia, and some unfortunately destroyed. The remainder were pub. in 1890 and were an immediate success. Her poems are short epigrammatic lyrics which may be grouped under such heads as Life, Love

Nature, Death. The verse has an exquisite and unusual music; her rhythms and her sensitive manipulation of words are peculiar to herself, and these qualities are combined with a rare sensibility and an original mind. In her perception of life emotion was at once followed by a newness of thought. With Emerson, whom she resembled in method, E. D. ranks as one of the greatest Amer. poets of the 19th cent. Her collected letters were pub. in 1894 and *Complete Poems* in 1925, ed. by M. D. Blanchi; *Further Poems* appeared in 1929 and a revised *Complete Poems* in 1937; also *Bolts of Memory, New Poems*, ed. by M. L. Todd and M. T. Bigham, 1945. See M. D. Blanchi, *The Life and Letters of Emily Dickinson*, 1924; J. Pollitt, *Emily Dickinson*, 1930; G. Taggard, *The Life and Mind of Emily Dickinson*, 1930.

Dickinson, Goldsworthy Lowes (1862-1932), author, b. London, son of Lowes D., artist. He was educ. at Charterhouse and at King's College, Cambridge, where he later became a fellow. He was also a lecturer at the London School of Economics and Political Science. His works include: *The Greek View of Life*, 1896; *The Meaning of Good, a Dialogue*, 1907; *Justice and Liberty, a Political Dialogue*, 1908; *Appearances, being Notes of Travel*, 1914; *The European Anarchy*, 1916; *The Choice before Us*, 1917; *War: its Nature, Cause and Cure*, 1923; *The International Anarchy, 1904-1914*, 1926; *Goethe and Faust* (with F. M. Stawell), 1928; *After Two Thousand Years*, 1930.

Dicksee, Sir Francis Bernard (Frank) (1853-1928), painter, b. London. Studied painting under his father and at the Royal Academy; gained the gold medal of that institute for his 'Elijah confronting Ahab and Jezebel in Naboth's Vineyard', 1876. He became A.R.A. in 1881; R.A. in 1891; and P.R.A. in Dec. 1924—when he was knighted. He belonged to the school of painters specialising in 'romantic and sentimental illustration' and of this school was a late survival. Among his best works may be included 'Evangeline', 'The Symbol', 'Romeo and Juliet', 'Funeral of a Viking', 'The Magic Crystal', 'Paolo and Francesca', 'The Passing of Arthur', 'La Belle Dame sans Merci', and 'The Ideal'.

Dickson, Carter, see CARR, JOHN D.

Dickson-Poynder, Sir John, see ISLINGTON, 1st BARON.

Dicotyledons, the larger of the 2 great groups of Angiosperms (q.v.), monocotyledons being the lesser; characterised by having 2 cotyledons or seed-leaves in their embryos. D. are subdivided into (1) Monochlamydeae, the members of which have flowers with a sepaloid perianth or absent altogether, and often unisexual: to this belong the Urticaceae, Amelantaceae, and other orders; (2) Polypetalae, in which the flowers are hermaphrodite (i.e. contain both stamens and pistil), the perianth usually consists of calyx and corolla and the petals are free from one another; (3) Gamopetalae, with hermaphrodite flowers, and petals joined.

Dietamnus Albus, Burning Bush, Dittany, Fraxinella, E. European perennial herb, only species of its genus, with glands in the upper part giving off a fragrant, volatile, inflammable oil, which can be ignited on a hot still day.

Dictaphone, see AUDIO-TYPIST.

Dictator (Lat. *dictare*, to command), the title given to an official of the Rom. rep. whose earlier title was *Magister populi*. The office, as the earlier title suggests, was originally instituted in times of military crisis; the first D. was appointed in 501 bc, according to Livy, during a crisis in the war with the Latins. Later a D. was appointed in times of constitutional crisis and for criminal jurisdiction; this was the 'administrative' D. In early times the D. had absolute power over the life and death of the citizens, but that power was limited by the *Lex Valeria* (300 bc). From the beginning his absolute power was checked by his having to apply to the senate for money, and having no authority outside Italy. Originally the office was confined to the patricians; C. Marcus Iulius was the first plebeian elected, in 356 bc. The last regular D. elected was M. Junius Pera in 216 bc. The office, as revived by Sulla in 82 bc, was only similar in its bestowal of almost absolute power. He had himself elected 'for the establishment of the Republic', and he held the office for 3 years. The dictatorship of Julius Caesar was even less provisional and constitutional. In 43 bc he was appointed for 1 year, in 46 bc this period of office was extended for 10 years, and in 45 bc for life. After his death the office was abolished by Marcus Antonius in 44 bc.

In later times the titles and powers of D.s have been seized by usurpers and the heads of revolutionary movements, notably in the S. Amer. states, in Haiti, San Domingo, and Mexico. It might have been thought that the steady advance of democracy along constitutional lines would have precluded the possibility of a D. to bless or burden mankind. Yet in Europe the period between the First and Second World Wars may justly be known as the age of the D.s. In 1922 Mussolini rose to supreme power in Italy and Mustafa Kemal in Turkey. Mussolini's example was followed in Spain by Primo de Rivera in 1923. In Soviet Russia, on the death of Lenin, chief power passed to Stalin. It was largely by exploiting the fear of Bolshevism in W. Europe and appealing to nationalist sentiment that Mussolini in Italy and Hitler in Germany consolidated and maintained their power. Lesser D.s of the period were Marshal Pilsudski in Poland, Dollfuss in Austria, and Adm. Horthy in Hungary. The Fascist and Nazi dictatorships of Italy and Germany were swept away by the Second World War. Only Stalin in Russia and Franco in Spain survived as D.s in Europe. On the death of Stalin in 1953 Malenkov succeeded, but as head of the new system of 'collective leadership' Malenkov was replaced by Bulganin and Khrushchev in 1955, again as leading members of a

group all the members of which shared in ultimate power. Mao-tse-tung and Chou En-lai were estab. as president and prime minister of China on the victory of the Communists over the Nationalists under Chiang Kai-shek in 1949, but their democratic titles concealed dictatorial powers. See articles on those mentioned.

Dictatorship of the Proletariat, in Marxist theory the state power during the transition from capitalism to socialism. In Russia the Communist rule from 1917 till the adoption of the Stalin Constitution, 1936, was officially termed the D. of the P., exercised through the Soviets (see SOVIET).

Dicte, mt in Crete, 7166 ft high.

Dictionary, in its proper sense, is a book containing a list of the words of some language arranged in a definite order, usually alphabetical, together with explanations of these words. For a mere word-list without explanations the term *onomasticon* is now used; a glossary, on the other hand, is a partial D., dealing with some section only of a language, or with a special author; while the term *lexicon* is usually reserved for Gk, Heb., Syriac, or Arabic D.s. In a complete D. information is also given on the etymology of each word, and the correct pronunciation is indicated by some kind of symbols.

Lexicography, like most other sciences, goes back to the ancients, and the earliest lexicographer of whom we have record is Aristophanes of Byzantium, who was head of the great library of Alexandria at the beginning of the 2nd cent. BC. Julius Pollux, who made a list of Attic words with explanations in the 2nd cent. AD, was followed some centuries later by Hesychius, whose work was used in the 10th cent. by the most famous of Gk lexicographers, Suidas; his lexicon contains not only a list of words with their meanings and illustrative quotations, but a number of informative articles. The first Gk D. in modern times was the *Thesaurus Graecae Linguae* which the Fr. scholar and printer Henri Estienne, known as Stephanus, pub. in 5 vols. in 1572; it was revised in 1831 by a Parisian scholar, Ambroise Firmin Didot, and is still a standard authority. The standard Gk-Eng. lexicon is that of H. G. Liddell and Robert Scott, first pub. in 1843 and completely revised by Sir Henry Stuart Jones and Roderick Mackenzie in a 2-vol. ed. which appeared in 1940. For Late Gk the standard work is the *Greek Lexicon of the Roman and Byzantine Periods* of E. A. Sophocles, 1887.

In Lat. the 2 chief early philologists were Marcus Terentius Varro (q.v.), who wrote a vast work, *De Lingua Latina* (On the Latin Tongue), and Verrius Flaccus, whose encyclopaedic *De Verborum Significatu* (On the Meaning of Words) was abridged in the 2nd cent. by Sextus Pompeius Festus. In 1532 Robert Estienne (Stephanus), father of the Henri Estienne mentioned above, pub. his *Thesaurus Linguae Latinae*, which was the best Lat. D. of its time. It has been superseded by the great Ger. *Thesaurus Linguae Latinae*, which was begun in 1900 and though interrupted by the war is now

again in progress. Apart from this, the most important Lat. D. is the It. *Lexicon Totius Latinitatis* of J. Facciolati, A. Forcellini, and J. Furlanetti, revised by F. Corradini in 1864. The most comprehensive Lat.-Eng. D. is that of C. T. Lewis and C. Short, first pub. in 1879, but it will be superseded by the *Oxford Latin Dictionary* now being compiled by the Oxford Press; arranged on historical principles, it will cover the language from the earliest times to the 2nd cent. AD. For later Lat. there is the *Glossary of Later Latin to 600 A.D.* by Alexander Souter, pub. in 1949, and for medieval Lat. the standard work is the *Glossarium Mediae et Infimae Latinitatis* of Charles du Fresne, Seigneur du Cange, first pub. in 1678, latest ed. 1887.

Lexicography in England may be said to begin about 1440 with Geoffrey the Grammarian's *Promptorium Parvulorum*, the first Eng.-Lat. vocabulary, but the first D. specifically so termed was made by Sir Thomas Elyot in 1538. All the early D.s dealt with foreign or difficult words only. 1604 saw the first real Eng. D., still of this type, Robert Cawdrey's *Table Alphabetical of Hard Words*, which explained 'inkhorn terms' that had been introduced from other languages; a similar work was Thomas Blount's *Glossographia*, 1656. A definite stage in progress was marked by Nathaniel Bailey's *Universal Etymological English Dictionary*, 1721, which was the first to include all Eng. words—a necessary innovation since it was giving their derivations. It also won distinction as the work on which Dr Johnson based his famous *Dictionary of the English Language*, 1755. Johnson's definitions and illustrative quotations are excellent, but his work had the defect that it went no further back than the time of Sidney and also suffered from the limitations of 18th-cent. etymological knowledge.

The *Oxford English Dictionary* marked the furthest advance yet made in the science of lexicography when it introduced historical principles and traced the development of each word from its first appearance. Begun in 1858 with Herbert Coleridge and after him F. J. Furnivall as its first editors, it took 70 years to compile. The first 20 were occupied in gathering material, and it was not until Dr (afterwards Sir) J. H. Murray became editor-in-chief that an actual start was made with articles, the first part being pub. in 1884. Three more editors (with, of course, a numerous staff) were concerned in its compilation—Dr H. Bradley, Sir Wm A. Craigie, and Dr C. T. Onions. The D., which in its later format runs to 13 vols., defines 414,825 words, illustrated by 1,827,306 quotations. A supplementary vol. appeared in 1933, and there are a number of abridgements, including the 2-vol. *Shorter Oxford Dictionary*, ed. by C. T. Onions, and the *Concise Oxford Dictionary* of H. W. Fowler and F. G. Fowler, the 4th ed. of 1951 being revised by E. McIntosh; this is commonly accepted as the authoritative working D. for everyday use. But many leading

publishers have brought out D.s, among the best known being *Chambers's Twentieth Century Dictionary*, *Nuttall's Standard Dictionary*, and the *Everyman's English Dictionary*.

In addition to those comprehensive Eng. D.s there are also specialised works which deal with separate stages or aspects of the language. O.E. is treated in the *Anglo-Saxon Dictionary* of Joseph Bosworth, revised by T. N. Toller, 1898; and M.E. in F. H. Stratmann's *Middle-English Dictionary*, revised by H. Bradley, 1891. A new *Middle English Dictionary* is also in progress in America under the editorship of Profs. Hans Kurath and Sherman Kuhn. Other specialised D.s are the *Etymological Dictionary of the English Language* compiled by W. W. Skeat in 1882, and the monumental 6-vol. *English Dialect Dictionary* of Joseph Wright, 1898. The standard work on pronunciation is the *English Pronouncing Dictionary* of Daniel Jones (latest ed. 1955). A massive *Dictionary of Slang* (latest ed. 1949) was produced by Eric Partridge, and distinctively Shakespearean words are dealt with in Dr Onions's *Shakespeare Glossary*, 1911. Rhyming D.s date back to Peter Levin's *Manipulus Vocabulorum*, 1570, which had many successors.

While the *Oxford Dictionary* is the accepted authority in Britain, in the U.S.A. the standard work was the *American Dictionary of the English Language*, first compiled by Noah Webster (q.v.) in 1828, which has now expanded into the 2-vol. *Webster's New International Dictionary*, 1936. A distinctive *Dictionary of American English*, compiled by Sir Wm Craigie, 1936-44, deals with the language down to 1900, and in 1951 there was pub. *A Dictionary of Americanisms on Historical Principles*, by Mitford M. Mathews, which contains all words of Amer. origin down to 1950.

For many years the authoritative Scots D. was the *Etymological Dictionary of the Scottish Language* by John Jameson, revised by John Longmuir and David Donaldson, 1879, but it is now being gradually superseded by 2 great new D.s which are in progress. Sir Wm Craigie's *Dictionary of the Older Scottish Tongue* covers words and usages down to the end of the 17th cent., while the *Scottish National Dictionary*, begun in 1928 by Dr Wm Grant and carried on from 1946 by David D. Mursion, deals with the later development of the language, including Burns.

There are, of course, innumerable D.s of other modern languages, with or without Eng. equivalents for each word, and the term 'dictionary' has also come to be used of any work of reference (usually explanatory) which is arranged alphabetically. Hence we have D.s of botany, of dates, of heraldry, of medicine, of music, of proper names, of proverbs, of synonyms. The list could be extended to cover almost every dept of human knowledge. See James A. H. Murray, *The Evolution of English Lexicography*, 1900; J. R. Hulbert, *Dictionaries: British and American*, 1955.

Dictys Cretensis (of Crete), a native of Cnossus who is reputed to have followed Idomeneus to the siege of Troy and to have written an account of it. Lucius Septimius in the 4th cent. pub. an *Ephemeris belli Trojani*, which purports to be a Lat. trans. of the Gk of Dictys. See N. E. Griffin, *Dares and Dictys*, 1907.

Didactic Poetry (Gk *didaskkein*, to teach) is poetry which openly expresses its intention of conveying knowledge or instruction. Aristotle considered that a didactic poem was no more than a treatise; but there are so many degrees of didacticism in poetry that while most didactic poems are very inferior as poetry some are great in spite of the didactic element, e.g. *Paradise Lost* is didactic in so far as it sets out with the dogmatic aim, 'to justify the ways of God to man.' The majority of notable Eng. didactic poems have a theological aim, e.g. the *Faerie Queene*, which is essentially a vindication of Protestantism and Puritanism; and much of the poetry of Cowper, who fancied that the vehicle of verse might bring many to listen to truths (as he held them) which they would be disinclined to have stated to them in simple prose, is directed to theological tenets. The same poet's *Tirocinium* or *Review of Schools* is yet more obviously didactic, being written to 'recommend private tuition at home.' Thus poetry of very varying merit may be in greater or lesser degree didactic; but in a more restricted sense D. P. is rather that in which the precepts or teachings are not merged in accepted flights of poetic imagination but are set out dogmatically, as, e.g., Tusser's (q.v.) *Five Hundred Poymes of Good Husbandrie*. In anct Gk poetry the most famous example is Hesiod's *Works and Days*, a practical treatise on farming. In Lat. the *De Rerum Natura* of Lucretius (q.v.), an exposition of Epicurean philosophy, is the D. poem *par excellence*; and the *Georgics* of Virgil are also replete with precept, the Third Georgic containing practical precepts for farmers, and the Fourth giving much information about bees; but in both poets, though far more markedly in Virgil, the teacher is often dropped by the poet for the natural philosopher, speculating on the hidden reason of nature's operations. Bagehot, voicing the common opinion, thought that it was not the object of poetry 'to chill you with didactic icebergs,' but rather to select, idealise, purify and intensify the great features and peculiarities which make society as a whole 'remarkable and fancy-taking.' As poetry, J. P. is often commonplace, the matter not lending itself to the mode of expression which most appeals to the true poet.

Didcot, vil. of Berkshire, England, 7 m. S. of Abingdon; an important railway junction and an ordnance depot. There is an atomic energy research station 4 m. away. Pop. 11,000 (1954).

Didelphia, see MARSUPIALS.

Didelphys, see OPOSSUM.

Diderot, Denis (1713-84), Fr. philosophical writer and critic, b. Langres in Champagne. He was educ. at the Jesuit

College at Langres and the Collège d'Harcourt at Paris. He was intended for the Church, but on his expressing a distaste for it he was placed with a procureur in Paris to study jurisprudence. Evincing an equal distaste for the law, and refusing to return to his father's home, he was left in Paris to live by his wits. He tried many occupations, but continued at none—only defying starvation with his pen. He wrote anything and everything, indices, catalogues, advertisements, sermons, and trans. from Eng. His first important original work was *Pensées philosophiques*, 1746, in which he set forth the doctrine of the band of free-thinking philosophers who arose at about this time. Their doctrine is summed up in his own dying words: 'The first step towards philosophy is incredulity.' For his *Lettre sur les aveugles*, 1749, he was imprisoned at Vincennes by order of the gov. On his release D. collaborated with D'Alembert as editor of a *Universal Medical Dictionary*, a scheme which later grew into the *Encyclopédie, ou Dictionnaire Raisonné des Sciences, des Arts, et Métiers*. The work was enormous, and owing to the retirement of D'Alembert D. was sole editor for the greater part of the time. The first vol. was pub. in 1751, and the remaining 16, as well as 11 vols. of plates, in the years between 1751 and 1765. He embodied in his encyclopædia the philosophy which he had foreshadowed in the *Pensées philosophiques*, the dreary, rebellious philosophy of Atheism and revolt, which he shared with his friend and great contemporary, J.-J. Rousseau, and which was to inspire the Revolution. Among D.'s other works were the *Essay on Painting*, trans. and praised by Goethe; *Lettres sur les sourds et muets*, 1751; *Pensées sur l'interprétation de la nature*, 1754; *Code de la nature*, 1755; the tales of *Jacques le Fataïste* (inspired by Sterne), 1897; and *Le Nereu de Rameau*, 1805, the finest of his imaginative productions. This last is a didactic novel profoundly criticising human nature and social life. *Les Bijoux Indiscrets*, 1747, is an extreme example of the coarser style which he sometimes affected; he also wrote *La Religieuse*, 1790, a novel directed against convent life; *La Promenade du scripteur*, 1747; *La Réce d'Alcibiade* (c. 1755, not issued till 1830); *Lettres* to his mistress, Mlle Voland; and his last work, *Essai sur la vie de Sénèque*, 1778. The *Salons* (pub. variously 1759-1857) gave a strong impulse to art criticism in general, by establishing relations between art and literature, which previously had been largely dissociated. D.'s literary significance does not depend on any great work or works, but upon his versatility and universality, and on that account he is of the highest importance in the hist. of 18th-cent. literature. In his last years he sank into a state of extreme poverty. Catherine of Russia, to relieve him, bought his library, but appointed him custodian and paid him 50 years' salary in advance. In 1773 D. visited St Petersburg to thank the empress and returned to Paris only 12 days before his death.

Collections of D.'s works were pub. by Naigeon in 15 vols., 1798; reprinted in 22 vols., 1821; and by J. Assézat and M. Tournoux in 20 vols., 1875-79. See H. de Sainte-Beuve in *Portraits littéraires*, 1844; J. Morley, *Diderot and the Encyclopaedists*, 1886; A. Collignon, *Diderot, sa vie, ses œuvres, sa correspondance*, 1895; J. Le Gras, *Diderot et l'Encyclopédie*, 1928; A. Billy, *Vie de Diderot* (with bibliography), 1943.

Didius Salvius Julianus, Marcus, Rom. emperor (28 Mar.-2 June, AD 193). After the death of Pertinax (q.v.) he purchased the empire, which had been put up for auction by the praetorian guards, but was murdered after a reign of only 2 months.

Dido, or Elissa, legendary daughter of Belus, king of Tyre, and sister of Pygmalion, his successor. Pygmalion murdered her husband, Acerbus or Sichæus (see Virgil). D. escaped with her treasures to Cyprus and N. Africa, where she founded Carthage on a piece of land bought from Iarbus, king of Libya. To escape marriage with Iarbus, she built a funeral pyre and stabbed herself before her people. Virgil in the *Aeneid* makes D. stab herself after her desertion by Aeneas, the hero of Troy, but more than 300 years intervened between the traditional fall of Troy (1184 BC) and the foundation of Carthage (853 BC).

Didon, Henri (1804-1900), Fr. Dominican preacher. In 1871 he delivered the funeral oration at the obsequies of Archbishop Darboy (q.v.). A keen student of St Thomas Aquinas, D. was interested in the reconciliation of religion and science; but his lectures on that subject brought him under suspicion, and he retired to Corsica. His most popular work was *Jésus Christ*, 1890, the outcome of a visit to the Holy Land.

Didot, François (1689-1757), founder of a family of famous Fr. printers. He started in trade as a bookseller and printer in 1713, and is noted for his collection of the travels of the Abbé Prévost in 20 vols., 1737. *François Ambroise* (1730-1804) and *Pierre François* (1732-93), his sons, made significant improvements in the arts of typefounding and paper-making, the former improving the point system of type sizes, originated by Fournier in 1737, which remains the standard adopted on the Continent of Europe under the name *Système Didot*. *Pierre l'aîné* (1761-1853), son of François Ambroise, and his brother *Firmin* (1764-1836) printed the notable Louvre eds. of the classics. Firmin also improved the stereotype method of plate-making (see GEN. W.), and invented the term. *Pierre François's* sons, *Henri* (1765-1852) and *St Leger* (1767-1829), added to the family's prestige, the former cutting a microscopic type which the latter used in a 64-mo ed. *St Leger* was the first to make paper in an endless roll. The 4th generation increased the prosperity and reputation of the business, which by 1840 included not only the publishing dept, but also printing works, foundry, paper mills, and ink factory. The

publishing was carried on by *Jules* (1794-1871) and *Henri II* (b. 1796), sons of Pierre l'aîné, until 1850 when it closed down. The other branch under *Ambroise Firmin* (1790-1876) and *Hyacinthe Firmin* (1794-1880), sons of Firmin, was in 1840 formed into the Fonderie Générale of Paris.

Didsbury, residential dist. of Manchester (q.v.).

Didymium, name given to a mixture of the 2 chemical elements *neo-didymium* and *praseo-didymium* before its dual nature had been ascertained.

Didymotichon, formerly called **Demotika**, tn of Thrace, Greece, near the R. Maritza and on the Sofia-Istanbul railway. Pop. 8500.

Didymus (1st cent. bc), nicknamed 'Chalcenterus' (Brass-guts) on account of his enormous output. He was an Alexandrian grammarian, and wrote no fewer than 3500 commentaries, lexica, etc., of which only fragments survive. See M. Schmidt, *Didymi Chalcenteri fragmenta*, 1854.

Die, see DROME.

Die Burger, S. African Afrikaans newspaper, estab. 1915, pub. in Cape Town, with great influence throughout the country as the largest and most important paper supporting the National party. It gives thorough coverage to all important happenings. Associated newspapers are *Die Volksblad* (Bloemfontein) and *Die Oosterlig* (Port Elizabeth).

Die Casting, see MOULDING.

Die-hards, nickname in Eng. politics current towards the end of 1918, when the coalition gov. under Lloyd George began to show signs of internal dissension, and to break up once more, as the electorate was already doing, into separate parties. Many Conservatives desired to return to the original party system. At first the leaders of this movement were few in number and small in influence, and they were called D. almost in derision. But gradually their influence increased until at an important party meeting they found themselves to be in a majority of nearly 3 to 1. The coalition gov. ceased to exist, and Lloyd George was succeeded in the premiership by Bonar Law. See also MIDDLESEX REGIMENT.

Die-sinking, used in the process of stamping an impression on coins or medals. The steel to be engraved for the die is at first carefully prepared and then subjected to a process which softens it. It is next given over to the engraver, who, by means of small hard implements of steel, cuts the design which he requires, and which must be a reversed one. When this is finished it has to be subjected to another process which makes it extremely hard. It is then ready for use, and is known as the matrix. As, however, the process of engraving is very expensive, it is seldom that the matrix is used for the actual stamping process. Instead of this the impression is produced by considerable pressure in relief on a block of soft steel, which is known as the punchon. The latter has to be hardened and it can then be used for conveying the design engraved on the matrix. Dies are also used in the

manuf. of many other articles besides coins or medals. They are used in the manuf. of jewellery and of clocks and watches, and also in stamping ornaments. The art of engraving dies dates from very early times, and very many ancient Greek coins survive as a record of the art.

Diebitsch-Zabalkanski, Hans Friedrich Anton, Count von (1785-1831), Russian gen. Made commander-in-chief of the Russian Army, 1829. (Chiefly famed for his passage of the Balkans, for which he received the titles of field-marshal and Count Zabalkanski.)

Dieburg, Ger. tn in the Land of Hessen (q.v.), 28 m. ESE. of Wiesbaden (q.v.). It has Rom. remains, a pilgrimage church, and an ancient fortress. Pop. 9000.

Diedenhofen, see THONVILLE.

Diefenbach, Lorenz (1806-83), Ger. linguist and ethnologist, b. Ostheim (Hessen). Wrote *Celtica* (2 vols.), 1839-42; *Glossarium latinogermanicum mediæ et infimæ ætatis*, 1857, a supplement to Du Cange's glossary (see DICTIONARY); and *Novum Glossarium latino-germanicum*, 1867; also a *Hoch-und-niederdeutsches Wörterbuch* (with E. Willeker), 1874-85; *Völkerkunde Osteuropas* (2 vols.), 1880; and other works, including a dictionary of the Gothic language and poems and novels.

Diefenbaker, John George (1895-), Canadian politician, and Prime Minister of



Karsh of Ottawa
JOHN DIEFENBAKER

Canada since 1957, b. in Grey co., Ontario, and educ. at Saskatchewan Univ. He served overseas in the Canadian Army, 1916, after graduation, and was called to the Saskatchewan Bar in 1919. He has

had a successful career as a barrister and has been counsel in many leading civil and criminal cases in Saskatchewan prov. He first stood as a parl. candidate in the general elections of 1925 and 1926, but was defeated. In 1940 he was elected for Lako Centre, Saskatchewan (and again in 1945 and 1949). He was the Canadian parl. delegate to the Brit. Parl. Association conference at Ottawa, 1943, and to the same association's conference in Bermuda, 1946, also to the Commonwealth Parl. Association conference in New Zealand and Australia, 1949; and he was chairman of the 1943 conference (the first at which representatives of the U.S. Congress met with Brit. Commonwealth and Empire representatives). He attended U.N.O. in San Francisco, 1945, as adviser to the Conservative party representative from Canada. He was a member of the N.A.T.O. parl. conference in Paris, 1955. In 1953 and 1957 he was elected member of parliament for Prince Albert, and became leader of the Progressive Conservative party in Dec. 1956. In June 1957 he was appointed Prime Minister of Canada, and immediately left for the Commonwealth Prime Ministers' conference in London to represent his country.

Dieffenbach, Johann Friedrich (1792-1847). Ger. surgeon, *b.* Königsberg in Prussia. First studied theology, then became a volunteer. Finally entered the medical profession, and became one of the most famous surgeons of the day; was appointed prof. of surgery in the univ. of Berlin, 1840; was particularly successful in the art of forming new noses, lips, and in other plastic operations. His many works include a great treatise on operative surgery, 1845-8.

Diégo García, is. dependency of Mauritius, in the Orléans group in the Indian Ocean, in 7° 20' S. lat. and 72° 26' E. long., about 12 m. long by 6 m. wide. Has a good harbour and exports coconut oil, coconuts, copra, guano, and salted fish. A large proportion of its 2800 inhabs. are labourers from Mauritius. Lying as it does on the direct route from the Red Sea to W. Australia it is proposed to equip it as a calling place for a Commonwealth Reserve air route. During the Second World War its excellent anchorage was used as a refuelling base for naval vessels.

Dielectric, non-conductor of electricity, or insulator. The name is applied particularly in connection with electrostatic induction and other effects transmitted through the substance. The force between 2 charged bodies depends on the D. between them. The capacitance of a capacitor depends on the D. between the plates. When the plates are connected by a wire, a discharge current flows in the wire and, according to Maxwell, the current circuit is closed by a 'displacement current' in the D. This current exists as long as the voltage between the plates varies, and is permanent when alternating voltage is applied.

Dielectric Constant or specific inductive capacity, now preferably called permittivity, ϵ (Brit. Standard 1991), a

material constant defined as the ratio of the capacitance of a capacitor with the material as D. to that of the same capacitor with a vacuum as D.

Dielectric Loss, leakage current through insulation, e.g. of cables (q.v.), due to the fact that no substance is a perfect insulator under all conditions.

Dielectric Heating.—If a D. is placed between, not necessarily in contact with, the plates of a capacitor and a high-frequency voltage is applied to the plates, part of the energy is converted into heat in the interior of the D. As a D. is also a non-conductor of heat, the method is useful for heating the bulk of plastics (q.v.) and for drying of porous materials, water being expelled from the hot interior. Heat applied to the surface of such materials would be ineffective. D. heating is also used in diathermic treatment of rheumatoid diseases (see **ELECTROTHERAPY**). See J. L. Langton, *Radio-frequency Heating*, 1949.

Dielectric Strength, see **ELECTRIC STRENGTH**.

See also **DISPLACEMENT, ELECTRIC**.

Diemen, Van, see **VAN DIEMEN**.

Diên-biên-phu, market in the valley of the Nam-Nhưn riv., about 1500 ft above sea-level and surrounded by mts, in W. Tonking (q.v.) close to the border of Laos (q.v.). Scene of the last and heaviest battle of the 1945-54 war in Viet Nam when the Viet Minh (q.v.) captured the big Fr. defensive position at a heavy cost to both sides.

Diepenbeek, Abraham van (1599-1675), Flem. painter, *b.* Bois-le-Duc. He became a pupil of Rubens (q.v.), and afterwards studied in Italy. His painting at its best is an imitation of Rubens, but he is known also as an engraver and glass-painter.

Dieppe, Fr. seaport and watering place, in the dept of Seine-Inférieure, on the Eng. Channel, at the mouth of the Arques, 33 m. N. of Rouen. There is a 15th-cent. castle, and a fine church of the 13th and 14th cents. The tn was occupied by the Eng. from 1420 to 1435 during the Hundred Years' War. In the wars of religion it was a Huguenot stronghold, and its prosperity declined after the revocation of the Edict of Nantes (q.v.) in 1685, and the Eng. and Dutch bombardments of 1694. Its people have an ancient sea-going tradition. There is a trade in fish, wines, and fruit and some industries, including ship-building, rope-making, and the manuf. of ivory and bone articles. There is a ferry to Newhaven. D. was considerably damaged in the Second World War, and was the scene of heavy fighting, notably during the famous raid of 1942 (see **DIETTE RAID**). It was the bp. of Duquesne (q.v.). Pop. 22,000.

Dieppe Raid, Combined Operations raid, carried out on the night of 18-19 Aug. 1942 by a force of 5000 Canadian troops, a detachment of Amer. Rangers, and some Brit. commando troops, embarked in naval vessels and transports and protected by warships and by a continuous fighter-plane 'umbrella' of the

R.A.F. Its purpose, according to Churchill, was to get information about the Ger. defences in the W. and on conditions to be expected in a large-scale assault on a strongly held Channel port. Among the objectives were 2 powerful batteries of 5.9 coast defence guns at Berneval on the E., and at Varangeville on the W., of Dieppe, and a radiolocation station which was used in Ger. attacks on Brit. Channel convoys. The plan was for landings to be made at over half-a-dozen points, preceded by a brief intense naval bombardment, followed by an attack of cannon-firing Spitfires and Hurricanes on the main defences. Tanks were to be put ashore to support the infantry in holding the garrison while the selected objectives were being destroyed. But the raid did not go 'according to plan,' though it was not entirely unsuccessful. The approach to the Fr. coast was betrayed through the ships running into some enemy armed trawlers which, soon reinforced by other enemy ships, opened fire. Sev. craft disembarked men near Berneval in broad daylight, nearly 30 min. late, and at once came under heavy fire. One commando made a sustained effort to destroy the heavy battery at Berneval but had to withdraw. At Varangeville, however, the assault parties succeeded in blowing up all 6 guns of the battery, but at great cost in casualties. Despite strong opposition landing forces destroyed one other battery and the radiolocation station, besides inflicting losses on the enemy. The 28 tanks which were landed could not give adequate support, since the anti-tank defences had not been overcome by the naval and air bombardment. While the prin. objective of the air operations was to support the landing parties, there in fact developed a great air battle in which nearly 100 Ger. aircraft were certainly destroyed, the total figure being probably much higher. Brit. land casualties were heavy. Of 5000 Canadian troops engaged 3372 were killed, wounded or missing. Such losses seem out of proportion to the value of the objectives desired or achieved, and the real reason for the enterprise is still difficult to discover. It occasioned acts of great gallantry and was acclaimed in Britain as a victory: the Germans stated next day that 'in our considered opinion the Brit. High Command did not even know what it hoped to achieve.' See R. W. Thompson, *Dieppe at Dawn*, 1956.

Diervilla, synonym: Weigela, a genus of deciduous shrubs, family Caprifoliaceae, about 12 species, native to E. Asia and N. America.

Dierx, Léon (1838-1912), Fr. poet of the Parnassian group, who is chiefly noted for the following works: *Poèmes et poésies*, 1864; *Lèvres closes*, 1867; *Les paroles du vaincu*, 1871; *Poésies complètes*, 1872. His *Oeuvres* were pub. in 2 vols., 1894-96. He was called the 'Prince of Poets' on Mallarmé's death.

Dies Irae (Lat. 'Day of Wrath'), a Lat. hymn on the Last Judgment (so called from its first words), based on Zeph. i.

14-18, written by Thomas of Celano (d. 1255), a friar belonging to the order of St Francis. This hymn was inserted by the Council of Trent as the sequence in the Requiem Mass. There are sev. Eng. trans, besides a paraphrastic rendering in Scott's *Lay of the Last Minstrel*. Its traditional plain-song melody is introduced into a number of musical compositions, notably Berlioz's *Symphonic fantastique*.

Diesel, Rudolf (1858-1913), Ger. engineer, b. Paris; prof. at Munich, inventor of the diesel engine—an internal-combustion engine using heavy oil as fuel. He disappeared from a Harwich steamer while travelling to London.

Diesel Engine, internal-combustion engine, using heavy oil as a fuel and introduced by Rudolf Diesel in 1897. Subsequently developed in various types by many engine manufacturers. It differs from other internal-combustion engines in the method by which the fuel is fed into the cylinder. In gas and petrol engines the fuel is drawn into the cylinder during the suction stroke as a combustible mixture with the air; but in the D. E. the fuel is injected separately at the end of the compression stroke and no sparking plug or other ignition is necessary. The D. E. greatly increased the range of liquid fuels which can be used in internal-combustion engines. See INTERNAL-COMBUSTION ENGINE; LOCOMOTIVES; MOTOR CARS.

Diesel Oil, see GAS OIL.

Diest, in the prov. of Brabant, Belgium, on the R. Demer. The duke of Marlborough took the tn in 1705. There are numerous breweries. Pop. 9500.

Diet (Lat. *acies*, a day), term originally applied to a session or sitting of a body of delegates or dignitaries, and afterwards transferred to the bodies themselves. The word applied to both legislative and eccles. meetings, hence the phrase 'diet of worship.' Compare also the famous 'Diet of Worms' held in Luther's time. Now the word is applied to assemblies held by the Ger. parliament.

Diet, see FOOD AND DIET; VITAMINS.

Diethylamine, 1 of the 3 types of amines (q.v.), produced by the action of ethyl halides on ammonia in alcoholic solution. It is colourless and inflammable, soluble in water, and boils at 57.5°. It is a basic substance and forms salts with acids. Formula: (C₂H₅)₂NH.

Dietrich, Johann Wilhelm Ernst (1712-1774), Ger. landscape and genre painter, b. Weimar. First instructed in the art by his father, then studied under Alexander Thiele. His pictures were exhibited at Dresden, Paris, and London; and he secured the patronage of the kindly Count von Brühl.

Dietrich, Marlene (real name **Maria Magdalene von Kosch**) (1904-), actress, b. Berlin, but now a naturalised American. She married Rudolph Sieber and has a daughter, Maria Riva, also an actress. She obtained her stage training with Max Reinhardt's school of drama and made her debut in the Viennese version of the play *Broadway*. She entered musical comedy, but it was the Ger. film *The Blue Angel* which led to fame and a Hollywood

contract. Her films include *Shanghai Express*, *The Scarlet Empress*, *Desire*, *The Garden of Allah*, and *Destiny Kides Again*. Although she now makes few films, she appears in cabaret, and with her apparently ageless beauty still remains the epitome of glamour.

Dietrich of Bern, see THEODORIC THE GREAT.

Dieuleft, Fr. tn. in the dept of Drôme, 50 m. S. by E. of Valence. It was famous in the 18th cent. as a resort of the Calvinists. There is a textile industry. Pop. 2400.

Dieuze, or **Duze**, Fr. tn in the dept of Moselle, on the Seille. An anc't salt mine near the tn is still active. About (q.v.) was b. here. Pop. 2400.

Diez, **Friedrich Christian** (1794-1876), Ger. philologist, founder of Romance philology. In 1818 he met Goethe who induced him to study Troubadour poetry. Also studied anc't Sp. literature and pub. *Altspanische Romanzen*, 1821, as well as *Beiträge zur Kenntnis der romanischen Poesie*, 1825; *Die Poesie der Troubadours*, 1826; and *Leben und Werke der Troubadours*, 1829. Appointed prof. of modern literature in 1830 at the univ. of Bonn. His other works are *Grammatik der romanischen Sprachen* (3 vols.), 1830-43; *Altromanische Sprachdenkmale*, 1846; and *Etymologisches Wörterbuch der romanischen Sprachen*, 1853.

Difference, see FINITE DIFFERENCES.

Differences, term used on the Stock Exchange to denote the amount of variation between the price at which it is agreed to buy or sell securities on a fixed day and the actual market price of the securities when that day arrives. Bargains for D. are not recognised by the rules of the Stock Exchange, being contrary to the law of wagering or betting contracts. It is not always easy to determine when an agreement with a broker is a mere betting contract or speculation on D., as in *bona fide* agreements the general practice is to carry over on every settling day and pay the D. only. The best test appears to be to ascertain whether each of the parties could in any event call upon the other to carry out his contract.

Differentia, the distinguishing characteristic which separates any 2 species of a genus. For example, the D. which separates the species man from the other species of the genus animal is the reasoning faculty.

Differential Calculus, branch of mathematics dealing with the rate of change of a function (q.v.) of 1 or more variables as the variables themselves change. Consider a function $y(x)$, of just 1 variable. The rate at which y changes as x changes is called the derivative (or differential coefficient) of y with respect to x , and is denoted by dy/dx (an alternative notation is $y'(x)$). The formal definition of the derivative is $\lim_{h \rightarrow 0} \frac{y(x+h) - y(x)}{h}$.

Here $y(x+h)$ is the value of the function y at $x+h$, where h is a very small increment in x . Then $y(x+h) - y(x)$ is the increase in the function y as x increases by h , and the quotient of the 2 can be considered as

the rate of change of y with respect to x for a small, but finite, increase in x . Since $y(x)$ is, in general, a continuously varying function of x , the rate of change will vary from point to point on the curve and must be specified at each point, not over a finite interval, however small. Thus, in the definition of the derivative, h must tend to zero. The derivative is therefore a function of x itself, and may also be differentiated. It is important to note that dy/dx must not be considered as the quotient of dy and dx , but as a symbol of the result of the limiting process described above. The process of finding a derivative is called differentiation.

An example will illustrate the process. Let $y(x) = x^n$. Then $y(x+h) = (x+h)^n$, which may be expanded by the binomial theorem (q.v.). Subtracting x^n and dividing by h one obtains $nx^{n-1} + \frac{1}{2}n(n-1)x^{n-2}h + \dots$ (higher powers of h). On letting h tend to zero all terms vanish except the first, and one has $dy/dx = nx^{n-1}$.

Sev. important laws of differentiation may be noted. They are: (i) the derivative of a constant is zero; if f and g are 2 functions of x , then, (ii) $d/dx(f+g) = df/dx + dg/dx$; $d/dx(fg) = f dg/dx + g df/dx$; and $d/dx(f/g) = 1/g^2(gdf/dx - f dg/dx)$.

If x and $y(x)$ are the co-ordinates of the point P on the curve, and $x+h$ and $y(x+h)$ are the co-ordinates of a neighbouring point Q on the curve, then $y(x+h) - y(x)$ divided by h is the tangent of the angle made by the line PQ with the x -axis, and as h tends to zero so Q tends to P along the curve. This limiting process will be recognised as just that used in constructing the tangent (q.v.) to the curve at P . Thus dy/dx , evaluated at the point P , is simply the value of the tangent of the angle made with the x -axis by the tangent to the curve at P .

Below is given a table of derivatives of some standard functions. For a detailed discussion of the methods and applications of the D. C. a standard textbook on the calculus should be consulted, for example G. A. Gibson, *An Elementary Treatise on the Calculus*, 1901.

$y(x)$	dy/dx
x^n	nx^{n-1}
$\log_e x$	$1/x$
a^x	$a^x \log_e a$
a^y	$a^y (\log_e a) dy/dx$
$\sin x$	$\cos x$
$\cos x$	$-\sin x$
$\tan x$	$\sec^2 x$
$\sin^{-1}(x/a)$	$(a^2 - x^2)^{-1/2}$
$\cos^{-1}(x/a)$	$-(a^2 - x^2)^{-1/2}$
$\tan^{-1}(x/a)$	$a/(a^2 + x^2)$
$\sinh x$	$\cosh x$
$\cosh x$	$\sinh x$
$\tanh x$	$\text{sech}^2 x$
$\sinh^{-1}(x/a)$	$(x^2 + a^2)^{-1/2}$
$\cosh^{-1}(x/a)$	$(x^2 - a^2)^{-1/2}$
$\tanh^{-1}(x/a)$	$a/(a^2 - x^2)$

Differential Equation. An equation between 2 or more variables that contains one or more differential coefficients is called D. E. The theory of D. E. deals with the solution of such equations, i.e. the elimination of the differential coefficients by integration, e.g. $\frac{dy}{dx} = 3x^2$ is a

D. E. and by integration with respect to the variable x we obtain the equation $y = x^3 + A$, where A is any constant. The latter equation is called the solution of the D. E. D. E.s are of considerable importance in all branches of science; they may be divided into 2 classes, viz. (i) *Ordinary differential equations* which contain only one independent variable,

e.g. $\frac{d^2x}{dt^2} = -n^2x$, where x is the dependent and t the independent variable. This D. E. is true of all types of simple harmonic motion of a particle in a straight line; x is the distance of the particle from the centre about which it oscillates and t is the time. The solution of this equation is $x = A \cos(\omega t + a)$, where A and a are constants determined by the particular conditions of the S.H.M. under consideration. Another famous ordinary differential equation is

$$LC \frac{d^2e}{dt^2} + RC \frac{de}{dt} + c = 0,$$

that is true for all cases of the discharge of a condenser of capacity C , through a circuit of resistance R , and self-inductance L . The solution of this equation determines the charge c on the plates of the condenser in terms of the time t . This solution and its subsequent experimental verification form the basis of modern wireless. (ii) *Partial differential equations* which contain 2 or more independent variables, e.g.

$$\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2} + \frac{\partial^2 u}{\partial z^2} = 0,$$

where u is the dependent, and x, y, z the independent variables. This equation is extremely important in the theory of electricity and in the theory of gravitational attractions. See H. T. H. Piaggio, *An Elementary Treatise on Differential Equations and their Applications*, 1928; N. Miller, *Differential Equations*, 1935; E. G. C. Poole, *Linear Differential Equations*, 1936.

Differential Geometry, geometry of the more familiar curves such as the straight line, the circle, the plane, ellipse, etc., together with surfaces such as the sphere and the ellipsoid can be dealt with by the analytical methods of algebraical geometry. In general, however, the geometrical properties of curves and surfaces vary continuously from point to point and when we wish to investigate such properties it is necessary to employ the analytical methods of the differential calculus (q.v.) that is capable of dealing with infinitesimal and continuous variations. D. G. is the branch of geometry that deals with such problems, just as algebraical geometry deals with geometrical problems that may be solved

by algebraic analysis. See J. E. Campbell and E. B. Elliott, *A Course of Differential Geometry*, 1926; E. L. Ince, *The Principles of Descriptive Geometry*, 1935.

Differentiation, see DIFFERENTIAL CALCULUS.

Differentiation, in biology, refers to the process in which the undifferentiated egg cell and embryonic mass gradually become more complex and *differentiated* as the cells multiply in number, become specialised in form and function, and appear as multicellular organs and tissues. The reverse process, *de-differentiation*, is also known, and is seen in cancer tissue. For further details and examples, see CELL.

Diffraction, In light, a modification which light undergoes in passing the edge of a body by which the rays appear to be bent and to invade the shadow. One of the strongest arguments considered by Newton in his discussion of the corpuscular theory of light transmission as opposed to the wave theory was that the latter did not explain shadows. If light from a small source is obstructed by an opaque body, it was said, a shadow with sharp outlines is produced, thus showing that light travels in straight lines. On the other hand, sound, which it was admitted travelled by waves, is only slightly affected by obstacles, as the impetus originated by the vibration makes its way round the edges of the obstacles. The argument fails because a small source of light does not produce a shadow with a well-defined edge, and, on the other hand, sound may be cut off by an obstacle, if the obstacle be large enough. The difference is accounted for by the fact that sound waves are often sev. ft in length, and are therefore not affected by small obstacles, while the mean length of light waves is about 1 fifty-thousandth of an in. Suppose a monochromatic light to proceed from a narrow slit towards a screen, and that an obstacle with a sharp edge be placed so that a portion of the light proceeding from the slit is cut off, it is found that, instead of there being a definite boundary line between illumination and darkness, a series of dark lines appears parallel to the edge of the geometrical shadow, becoming narrower and closer and more indistinct as they recede from the edge. At first these lines were explained by the interference of waves coming from the source with those reflected from the edge of the obstacle, but it was shown that the sharpness of the edge is immaterial. It was Fresnel who first proposed the theory of D., developed by Huyghens, which states that each element of any wave-front proceeding from a given source acts as a source of vibration itself, and sends out secondary waves. When the wave front reaches an obstacle, some of these secondary sources are destroyed and the resulting effects on the screen are due to the interference of the waves from the remaining sources. Some of the waves reinforce each other, and some, being in a different phase on account of the slight differences in distance of the screen from the point on the spherical

wave-front, tend to counteract each other. The resultant effect is a series of bands merging into each other, alternately bright and dark. When the source is red light the bands are relatively wide; when the source is violet the bands are narrower, owing to the shorter wave-length. When white light is used the bands are superposed, and a series of prismatic colours is produced. If light from a small source be allowed to pass through a narrow slit in an opaque screen, and then observed through a telescope behind the screen, a bright band of light will be seen, and on each side a series of alternately bright and dark bands gradually becoming less distinct as they recede from the middle band. If red light be used, the bands of illumination and of darkness will be relatively broad; they will be narrower if green is used, and so on. If white light is used, the colours are not exactly superposed, but a series of spectra will be seen, the violet being nearer the central band. If a grating composed of a parallel series of fine wires close together be used, the spectra will be seen with increased brilliance, and the closer such a grating can be made, the more brilliant will be the effect. D. effects by reflected light can be seen by cutting a series of fine grooves on a plane surface. The beautiful colours of mother of pearl are due to the striated nature of the surface and not to any absorptive powers inherent in the substance. Thus if a moulding of such a surface be taken in sealing-wax, the same colour effects are produced. D. spectra are preferable in many cases to prismatic spectra, as the nature of the material used is of no consequence, so that the bands of the spectrum take up their true position. *See also* LIGHT.

Diffusion, term in chem. applied to the mixture of 2 substances without chemical combination. Gases possess the property of D. more than liquids (e.g. diffusion of oxygen and nitrogen in the air), but some metals may be diffused under pressure at a high temp. *See also* CHEMISTRY and SOLUTIONS.

Diffusion Pump, a vacuum pump capable of producing much lower pressures than the mechanical pumps, e.g. the rotary oil pump. Hot vapour, of mercury or of a special oil, passes up a vertical tube and is deflected downwards through an annular nozzle into a water-cooled region where it condenses and returns to the reservoir of boiling mercury or oil. The jet of vapour from the nozzle drags with it any atoms which diffuse into it from the surrounding gas which comes from the vessel to be evacuated. This gas is pumped away by a mechanical pump, known as a fore pump, which is necessary to maintain a 'backing' pressure of about 10^{-3} mm. The earliest form was made by Gaede in 1915 and used mercury, but for most purposes modern pumps use low vapour pressure silicone oils which do not decompose or 'crack' during use and produce pressures of about 10^{-7} mm. of mercury, i.e. about 10^{-10} of an atmosphere. *See also* AIR PUMP.

Digamma (Gk *dis*, twice, and *gamma*), 6th letter in the anct Gk alphabet, found only in inscriptions. It was so called because of its likeness (*F*) to a double *gamma* (*Γ*). Its sound (a consonantal *w*) corresponded roughly to that of our letter *w*. It had disappeared from certain Gk dialects (e.g. Ionic) by the time of the Homeric poems; but although not written its influence can be traced in them, as, judging from the metre, some of the words (e.g. *ergon*) seem to have had a sound which was afterwards lost. D. survived, however, in other dialects till it was gradually discontinued in classical times, the sign itself surviving as the numeral 6. *See also* letter *F*.

Digby, Sir Everard (1578-1606), conspirator, was brought up a Protestant, and held office in Queen Elizabeth's household. He was converted to Catholicism by John Gerard, and was knighted by James I in 1603. Catesby (q.v.) persuaded D. to join in the Gunpowder Plot. D. was to have started a revolt in the Midlands on hearing of the plot's success. After its failure he was captured at Holbeach, Staffordshire, pleaded guilty to high treason at his trial, and was executed in St Paul's Churchyard.

Digby, Sir Henry (1769-1843), adm. He captured (1799) a Sp. frigate, a Fr. corvette, a privateer, and sev. other vessels, and at the battle of Trafalgar was in command of the *Africa*.

Digby, Sir Kenelm (1603-65), naval commander, diplomat, and writer, son of



SIR KENELM DIGBY

After van Dyck

Sir Everard D. (q.v.), educ. at Gloucester Hall, Oxford. In 1628 he set out for Gibraltar on a privateering expedition, capturing sev. ships and gaining a victory over the Fr. and Venetians at Scanderon. He was suspected of Rom. Catholic intrigues, was imprisoned by Parliament and later exiled to France, where he

became Henrietta Maria's chancellor. He retained this position after the Restoration even though he had indulged in dubious negotiations with Cromwell during a visit to England, 1654-6. D. wrote a number of philosophical and scientific works. Among them are *Observations upon Religio Medici*, 1643, and *Private Memoirs of Sir Kenelm Digby*, ed. by Sir N. N. Nicolas, and pub. in 1827. See E. W. Bligh, *Sir Kenelm Digby and his Venetia*, 1932; J. F. Fulton, *Sir Kenelm Digby*, 1937 (with bibliography).

Digby, William (1849-1904), journalist and E. India agent and merchant. He advocated an extension of self-gov. among Indians and founded the Indian Political Agency for distributing information in England about the Indians. His works include *The Famine Campaign in S. India, 1876-8*, 1878, and '*Prosperous*' *British India*, 1901.

Digby, co. and tn of Nova Scotia, Canada, bordering on the Bay of Fundy. The surface is varied with mts, rvs., and lakes. The cap., D., is a port, situated on D. Neck, 45 m. SE. of St John; there is a ferry connection between these ports. D. is noted for its herring fishery. Pop. of co. 20,000; of tn 2050.

Digest, see CORPUS JURIS CIVILES; JUSTINIANUS.

Digestion, process by which food is rendered soluble and diffusible, so that its nutrient constituents can be absorbed into the blood and lymph, and later assimilated by the tissues. D. takes place in the alimentary canal, which starts at the mouth, continues as the pharynx, oesophagus, stomach, intestines, and rectum, and ends at the anus. In the mouth occur mastication and salivation. The purpose of mastication is to crush and grind the food into small particles. The saliva is poured into the mouth from 3 pairs of glands named parotid, submaxillary, and sublingual. The parotid gland secretes a clear saliva, the other 2 a sticky saliva containing mucin. The saliva effects the solution of such substances as salt and sugar and moistens the food so that it can be rolled by the tongue and palate into a soft bolus. Saliva also has an important chemical action, for by means of an enzyme called *ptyalin* cooked starch in the food is converted into maltose, a kind of sugar. When the food is sufficiently masticated, it is pushed backwards by the tongue and urged rapidly into the gullet or oesophagus and thence into the stomach by a series of muscular movements known as peristalsis. The stomach is entered by the cardiac orifice which relaxes to admit the food and then closes. The mucous membrane of the stomach is lined with columnar epithelium, in which are embedded little pits called the gastric glands. From these glands gastric juice (q.v.) pours when they are stimulated by the approach of food. The muscular coat of the stomach (q.v.) produces movements which churn the food and tend to urge it towards the intestine. The pylorus (Gk, a gate-keeper), or orifice leading from the stomach, opens only in response to an acid stimulus, and as the

food received from the gullet is alkaline owing to the presence of salivary secretions, it remains in the stomach until thorough admixture with the gastric juice has rendered it acid. Gastric juice contains hydrochloric acid and an enzyme called *pepsin*, by which the proteins in the food are converted into peptones, and a second enzyme, *rennin*, which coagulates milk. The stomach proceeds to discharge its contents into the intestine about half-an-hour after the commencement of a meal, though it takes about 3 hours to empty itself. The intestine secretes a juice called *succus entericus* or intestinal juice; and 2 other secretions, pancreatic juice and bile, enter by their ducts, which open into the duodenum, or first part of the small intestine. Pancreatic juice contains 3 enzymes: *trypsin*, which attacks proteins more completely than gastric juice, converting them into amino-acids; *amyllopsin*, which converts starch into maltose, thus taking over the function of salivary juice whose activity is stopped in the stomach; and *lipase*, which splits the fats into glycerin and fatty acid. Bile by itself has no digestive action, but it aids the action of lipase. The intestinal juice contains the following enzymes: *enterokinase*, which is concerned in the production of trypsin; *crepsin*, which aids trypsin in the breaking up of peptones; and enzymes which convert maltose and other sugars into glucose. Covering the surface of the mucous membrane of the small intestine are a large number of small prominences called villi. These increase the surface for absorption by which the products of D. of protein and carbohydrate diffuse into small blood-vessels lying immediately under the epithelium. The glycerin and fatty acid are carried into the central lacteal or lymphatic vessel, and are again united into small globules of fat. The amino-acids from the proteins are carried in the blood-stream to repair and build up the tissues; any excess is converted by the liver into urea, which is sent to the kidneys to be disposed of. The tiny globules of fat pass into the thoracic duct, whence they find their way into the blood-stream and ultimately into the tissues, where they produce heat by oxidation or are stored up in the form of adipose tissue. The sugar is temporarily stored in the liver as glycogen and given out as glucose when required. The small intestine is about 22½ ft long and the passage of the food occupies about 4 hrs. It then travels more slowly through the 4 ft of large intestine, taking from 12 to 18 hrs to reach the rectum. During this time water is absorbed and the waste residue is gradually compressed as a compact mass into the rectum and finally is expelled by the anus. See also ENZYMES.

Diggers' Conference, body formed by the Bendigo gold-diggers of Victoria in Jan. 1854, which had for its object the supersession of the ordinary gov. The chief ground of complaint among the diggers was the licence system, and they also demanded representation on the Legislative Council of Victoria. When in Sept.

1853 the New South Wales Legislative Council seriously proposed to abolish the licence fees the miners of Bendigo naturally expected that Victoria would follow the lead. The Victorian Gov., however, instead of doing so passed a new Act greatly reducing the fees and legalising miners' customs. This partly satisfied the men, but it was evident the goldfields contained men who were opposed to any peaceable settlement. Hence the formation of the D. C. But though the movement for a congress came to nothing, the events of the next few months formed a crisis in the hist., not only of Victoria, but of Australia. The most notable of these events was the affair of the Eureka Stockade in the time of governor Sir Charles Hotham. This affair is sometimes described as the only 'battle' which ever took place on Australian soil. See further BALLARAT; EUREKA STOCKADE.

Digges, Leonard (d. c. 1559), mathematician, b. Barham, Kent, and educ. Univ. College, Oxford. He was the author of *A promiscuacion of right good effect*, 1555; *A Book named Tectonicon, briefly shewing the exact measuringe all manner lande*, 1562; *A Geometrical Practise, named Pantometria*, 1571; and *An Arithmetick Militare Treatise named Stratagickes for the Profession of a Soldiour* (with Thomas D.), 1572.

Digit (Lat. *digitus*, a finger), a word used to signify any number, from 0 to 9. Thus 4629 is a number of 4 D.s.

Digitalin, a poisonous steroid glycoside, is obtained from *Digitalis purpurea*, the foxglove and kindred plants. Deaths from overdoses of D. are rare since vomiting usually sets in early. Medicinally, D. is used in cases of heart disease, particularly in a condition known as auricular fibrillation in which the co-ordinating mechanism of the heartbeat is disordered. D. also stimulates the heart muscle, increasing the force of systolic contraction (see HEART), thus improving the circulation.

Digitalis, a European and Asiatic genus of Scrophulariaceae, is known in Britain chiefly by *D. purpurea*, the purple foxglove, from which the drug digitalin is prepared and used in medicine for heart complaints. *D. ambigua* is a cultivated species with yellow flowers; *D. lutea* grows in the woods of France and Germany, and *D. ferruginea*, with roundish rust-coloured flowers, in Asia and SE. Europe.

Digne, Fr. tn, cap. of the dept of Basses-Alpes, in the Bécône valley. It has a cathedral (15th-19th cents.), and a noteworthy Romanesque church, which was the cathedral until the 14th cent. There are hot springs at *Bains de D.*, 2 m. away. Pop. 9300.

Dignities, see NOBILITY; ORDERS OF KNIGHTHOOD; TITLES.

Digoin, Fr. tn in the dept of Saône-et-Loire, at the junction of the Loire with the Canal du Centre. It has pottery manufs. Pop. 6400.

Dihydroxysuccinic Acid, see TARTARIC ACID.

Dijon, Fr. city, cap. of the dept of Côte-d'Or, on the Burgundy canal at the confluence of the Ouche and the Suzon. It was the anct. cap. of Burgundy (q.v.). Known to the Romans as DIBLO, D. was joined to Burgundy in 1007. On the death of Charles the Bold (q.v.) in 1477 it went to France. It was taken twice by the Germans in 1870 (see FRANCO-GER. WAR). A bishopric and univ. tn, D. is rich in fine buildings. The former palace of the Dukes of Burgundy, now the tn hall, houses one of the most notable museums outside Paris. The 13th-14th-cent. cathedral of St-Bénigne, and the sev. other medieval and Renaissance churches, are all of interest, and there is a famous library in the former Jesuit college. St Bernard, Bossuet, Philip the Good, and de Brosses (q.v.) were b. here. D. is an important railway centre, and its main trade is in Burgundy wines (q.v.). It has metallurgical, foodstuff, printing, glass, chemical, and leather industries. It is famous for its mustard and spiced bread. Pop. 112,850.

Dikran, see TIGRANES.

Dikson, seaport at the mouth of the Venisey estuary, on the N. sea route (q.v.) 1246 m. from Archangel.

Dilemma, a predicament in which one is offered the choice between alternatives, both equally disagreeable. The 2 alternatives are called the 'horns' of the D., for if the victim escapes the one he will be caught on the other. A classical example of D. is shown in Aristotle's Athenian mother's advice to her son: 'Do not enter into public affairs: for if you say what is just, men will hate you; and if you say what is unjust, the gods will hate you.'

Dilettanti, Society of, club founded about 1733 by a number of gentlemen for the purpose of social intercourse and for the study, as amateurs, of antique art. Funds having accumulated, the society sent out in 1834 an exploring party (under Chandler, Revett, and Pars), and later a second expedition, to collect details and make drawings of the most important monuments of antiquity. These expeditions brought back material for sev. vols. pub. by the society: *Ionian Antiquities*, *Specimens of Ancient Sculpture*, *Unedited Antiquities of Attica*, *Portfolio of Greek Architecture*, etc.

Diligence, the name given to a public conveyance of the nature of a stage coach. See COACH AND COACHING.

Diligence: 1. In Scots law: (a) A term nearly equivalent to *execution* in the Eng. law. It includes the various means by which the person may be seized and imprisoned or the property attached and disposed of, for the purpose of enforcing payment of a debt or performance of any civil obligation. (b) A warrant to enforce the attendance of a witness, or the delivery to court of productions.

2. In Eng. law the term diligence may be used in the law of bailments to indicate the degree of care which a person to whom goods are entrusted must exercise in the custody of the goods to escape liability for loss or damage to them.

Dilke, Charles Wentworth (1789-1864), journalist, entered the civil service, in which he remained until 1836, but his main interests were literary. His connection with the *Athenaeum* began in 1829, and in the following year he became editor and proprietor. He was editor of the *Daily News*, 1846-9. See his collected papers, ed. by his grandson, 1875.

His grandson, **Sir Charles Wentworth Dilke**, 2nd baronet (1843-1912), was b. in London and educ. at Trinity Hall, Cambridge. In 1868 he entered Parliament as a Radical. An effective speaker, he soon became a prominent figure in the House of Commons. In 1880 he was appointed under-secretary of foreign affairs, and he conducted efficiently the business of his dept until 1885, when Gladstone was forced to resign. As a result of a citation in a divorce suit he had to retire from public life (1886), but from 1892 was again returned to Parliament. He was a recognised authority on foreign and imperial affairs, and pub. sev. books on these subjects. See life by S. Gwynn and G. M. Tuckwill, 1917.

Dilke, Lady, née Emilia Frances Strong (1840-1904), writer on art, daughter of Maj. Strong of Oxford, wife first of Mark Pattison, then of Sir Charles Wentworth D. On the advice of Ruskin she became a student at the Art School, S. Kensington, in 1859. She studied much in France, gathering material for her books, among which are: *The Renaissance of Art in France*, 1879; *Claude Lorraine* (written in Fr.), 1884; *French Painters*, 1899; *French Architects and Sculptors*, 1900.

Dill, Sir John Greer (1881-1944), soldier, b. Belfast, N. Ireland, educ. Cheltenham and Sandhurst. He served in the S. African war in 1902, and at the beginning of the First World War he was appointed a brigade major. He later served at the H.Q. of the Canadian Corps, and from 1917 onwards he was Chief of the Operations Branch with the rank of colonel. D.S.O., 1915; C.M.G., 1918. He was promoted to brigadier in 1928 when he went to India, and major-general in 1930. In 1931 he became commandant of the Staff College. Lieutenant-general, 1936. On the outbreak of the Second World War he went to France in command of the 1st Corps of the British Expeditionary Force, but returned to England in 1940 to become vice-chief, and later chief, of the Imperial General Staff. The formation of the Commandos (q.v.) in 1940 owed much to his inspiration and vision. In 1941 he vacated this post on reaching the age of 60, and was promoted to the rank of field-marshal. The same year he left for Washington for special duties on the Combined Chiefs-of-Staff Committee. He was present at the Casablanca Conference and also travelled in the Far E. on a special mission as representative of the prime minister. He d. at Washington, K.C.B., 1937; G.C.B., 1942. Awarded the U.S. Distinguished Service Medal.

Dill, *Peucedanum graveolens*, an aromatic, umbelliferous ann. herb. The fruit is employed medicinally as a carminative in the form of dill water, or *aqua Anethi*, and

is also used as a condiment. The sowa D., or *Peucedanum Sowa* of Bengal, has a fruit which is often used in curries.

Dilleniaceae, family of Dicotyledons, chiefly 12 genera of tropical shrubs and trees, most of which bear yellow flowers and have leathery leaves. The bushes help to form the Australian scrub, the trees are found in woods in tropical India, and the woods of Brazil have sev. kinds, usually of climbing or trailing habit. Typical genera are *Acrotrema*, *Curatella*, *Dillenia*, and *Hibbertia*, the latter containing *H. volubilis*, a showy twiner with offensive-smelling flowers.

Dillenius (Dillen), Johann Jakob (1684-1747), Ger. botanist who came to England on the invitation of Sherard, and settled in Oxford, becoming the first Sherardian Prof. of Botany. He ed. Ray's *Synopsis stirpium Britannicarum*, 1724, and wrote *Herbarium Illudensis*, 1732, *Historia Muscorum*, 1741.

Dillingen: 1. Ger. tn in the Land of Bavaria (q.v.), on the Danube (q.v.), 58 m. NW. by W. of Munich. It has a 13th-cent. castle, and sev. old churches and monasteries. There was once a univ. Pop. 10,000.

2. Tn of the Saarland, on the Prims, 15 m. NW. of Saarbrücken (q.v.). It is a railway junction, and has steel, engineering, and chemical industries. Pop. 13,000.

Dillmann, Christian Friedrich August (1823-94), Ger. orientalist and theologian, founder of the modern branch of Ethiopic studies. He studied under Heinrich Ewald at Tübingen. During 1846-8 he visited the libraries of Paris, London, and Oxford, studying their Ethiopic MSS.; those of London and Oxford he catalogued. Chief works: *Grammatik der äthiopischen Sprache*, 1857; *Lexicon Linguae aethiopicae*, 1865; *Chrestomathia aethiopica*, 1866; *Commentar zum Hiob*, 1869; historical monographs on Aksum and on Zara Jacob; and *Vorlesungen über Theologie des Alten Testaments*, 1895.

Dillon, John (1851-1927), Irish politician, M.P. for E. Mayo (1885-1918); one of the leaders of 'Young Ireland' (q.v.). He first entered the House of Commons in 1881 as member for Tipperary; he was then a supporter of Parnell (q.v.). In the same year he was twice arrested for inciting to boycotting. He was one of the pioneers of the 'Plan of Campaign' and the Land League. After 6 months' imprisonment in 1888 he went to Australia and New Zealand collecting funds for the National party, then was again imprisoned in 1891. He declared against Parnell in 1891 and became leader of the United Nationalist party and chairman of the Irish National Federation from 1896 till 1900—when John Redmond became leader of the re-united party. D., accompanied Redmond to Buckingham Palace in July 1914, on the occasion of the conference on the gov. of Ireland. When Redmond d. D. succeeded him as leader. His party was virtually extinguished by Sinn Féin (q.v.) in Dec. 1918. He d. in a London nursing home.

Dillon, Wentworth, see ROSCOMMON, W. D.

Diluvial Formation, name, now obsolete, applied to the deposits laid down by the Pleistocene ice sheets, under the impression that these deposits were the products of Noah's flood. See GLACIAL PERIOD.

Dime (Lat. *decima*, a tenth, through O.F. *disme*), a small silver coin of the U.S.A.; its value is 10 cents, or one-tenth of a dollar.

Dimension, in geometry, a direction or mode in which extension may be measured. A point, having no magnitude, has no D.; a line has 1 D., length; a surface has 2 D.s., length and breadth; a solid has 3 D.s., length, breadth, and thickness. The motion of a point generates a line, the motion of a line generates a plane or surface, and the motion of a plane generates a solid figure. Proceeding to an analogous motion of a 3-dimensional solid, the concept of a figure of 4 D.s. has been obtained, and by an extension of these ideas we arrive at n -dimensional geometries. An example is offered by the 4-dimensional space-time continuum occurring in the theory of relativity (q.v.), where the use of a 4th co-ordinate, specifying the time of an event, in addition to the 3 spatial co-ordinates, necessitates the use of a 4-dimensional geometry.

In algebra, terms formed by the multiplication of a quantity by itself are called 'squares,' and terms generated by the product of 3 similar factors are called 'cubes' by analogy from the geometrical concepts. Equations containing terms of 1 degree or D. are called linear, those containing terms of 2 degrees or D.s. are called quadratic, and those containing terms of 3 degrees or D.s. are called cubic. It is to be observed, however, that the symbol x^2 does not represent a surface, or x^3 a volume, and in graphical representation the functions x^2 , x^3 are represented by lines; x^2 , in fact, represents a number merely, but if a preliminary statement be made that x represents the number of units of length in a certain straight line, then obviously x^2 represents the number of units of area in a square, each of whose sides contains x units of length.

In physics, symbols are used to represent quantities measured in terms of units of length, area, volume, time, mass, velocity, force, etc. For the sake of brevity and simplicity, such equations as $s = vt$ (distance = velocity \times time) are used. The employment of such an expression does not mean, for instance, that velocity is multiplied by time, if that has any meaning at all, but that the numerical measure of the space traversed is obtainable by multiplying the numerical measure of the velocity in terms of the unit of velocity by the numerical measure of the time taken in terms of the unit of time. Of the units used in mechanics, those of length, time, and mass are fundamental, that is, we cannot explain them by reference to anything else. The units of area, volume, velocity, acceleration, force, etc., are derived units; that is, they can be explained by reference to 1 or more funda-

mental units. The quantities used as fundamental units are chosen arbitrarily. If we are speaking of an interval of 2 hrs. and use 1 hr as the unit of time, the interval will be represented by the number 2; if 1 min. were the time-unit, the interval would be represented by the number 120, and so on. Suppose $[X]$, $[Y]$, $[Z]$ be 3 units in which any physical quantity can be measured, and let x , y , z be the numbers of those units which represent a certain amount of the quantity, then $x[X] = y[Y] = z[Z]$, whence $x : y : z = 1/[X] : 1/[Y] : 1/[Z]$; that is to say, the number expressing the amount of any quantity is inversely proportional to the unit chosen for its measurement. Many writers use the centimetre as length-unit, the gramme as mass-unit, and the second as time-unit, but the foot as length-unit and lb. as mass-unit are still often employed. If m represents the number of grammes and m' the number of lb. in a given piece of matter, then $m[M] = m'[M']$, or $m = (M'/M)[M]$. The ratio $[M]/[M']$ is the number of grammes in a lb., or 453.59, and this ratio may be employed in transferring the measure of any mass from one system of units to the other.

The measure of density is indicated by the equation $d = m/v$, where m represents the number of units of mass and v represents the number of units of vol. If $[L]$ be the unit of length, and a rectangular parallelepiped be supposed whose length is $l[L]$, breadth $l'[L]$, and height $l''[L]$, its volume will be $l'l'l''[L]^3$. Now, if $[V]$ be the unit of vol., and if there be v units of vol. in the parallelepiped, then $[V]v = l'l'l''[L]^3$. But l , l' , l'' and v are mere numbers, therefore $v = l'l'l''$, and $[V] = [L]^3$. Now, returning to the equation for density, we get $[D]d = [M]m/[V]v$, or $[D]d = [M]m/[L]^3$, whence $[D] = [M]/[L]^3$. The ratio $[M]/[L]^3$ is the D.s. of the unit of density in terms of the fundamental units of mass and length. Again, for velocity we have the equation $s = vt$. This means $s[L] = v[V]/t[T]$, $\therefore v[V] = s[L]/t[T]$, where r , s , and t are mere numbers and $[V]$ is the unit of velocity. Therefore $[V] = [L]/[T]$. That is to say, the unit of velocity has D. 1 in length and D. -1 in time. Similarly from the equation $s = \frac{1}{2}ft^2$ we obtain $s[L] = \frac{1}{2}[F][T]^2$, where $[F]$ is the unit of acceleration and s , f , t^2 and $\frac{1}{2}$ are mere numbers. Therefore $[F] = [L]/[T]^2$ or $[L]/[T]^2$. The unit of acceleration has therefore D. 1 in length and D. -2 in time. The D.s. of other physical units may be similarly explained. See also METROLOGY; PHYSICAL UNITS.

Dimethyl Ketone, see ACETONE.

Dimidiation (Lat. *dimidiare*, to halve), in heraldry, term denoting the cutting of 2 coats of arms in half and joining the dexter half of the one to the sinister half of the other.

Diminishing Return. Law of diminishing return is one of the elementary laws of the science of economics (q.v.). John Stuart Mill said that this law was the most important and in its different phases perhaps the most commonly misapplied

law in political economy. In respect of a piece of land (say an ac.) the law states that after a certain point, other things remaining the same, the returns on successive applications of labour and capital will continuously diminish. The law is part of a larger principle: that returns on the varying factor first *increase* and then diminish; this is the Law of Variable Proportions. D. R.s apply after a point provided there is no change in the state of knowledge (inventions may put off diminishing returns indefinitely) or in the scale of operations (one more man may make it possible to use a combine harvester). The law applies, of course, to all other productive agents. Its peculiar value in the case of land arises from the fact that the quantity of land is limited and the better qualities still more limited; so that while capital and labour may go on increasing, land cannot so increase, and any increase of the produce must be at an increasing cost, or in other words the return per unit diminishes. The law of D. R. is of great value in its wider applications to the economic study of rent, population, value incidence of taxation, etc.

Dimissory, Letters (Lat. *dimittere*, to dismiss), a letter in which a bishop consents to the ordination by another bishop of one of his candidates for holy orders.

Dimorphism (Gk *dis*, twice, and *morphê*, shape or form): 1. A term applied in zoology and botany to the appearance of an organism in 2 different forms. The dimorphic organisms are fundamentally identical in structure and in origin. Thus, the bee is dimorphic in the female sex, the fertile queen and the barren worker presenting the 2 forms. The same phenomenon is seen in the 'nutritive' and 'reproductive' forms in colonies of hydroids. The 2 sexes present such widely different forms in some of the insects, crustaceans, and fishes that they seem to belong to quite different genera—this is sexual D. Butterflies are subject to 'seasonal' D. Among flowers, the varieties of the primrose offer good examples of dimorphic forms.

2. In the mineral kingdom a body is said to be dimorphous when it is capable of crystallising according to 2 different systems geometrically incompatible, the chemical composition of the dimorphic bodies being identical. Carbon, sulphur, phosphorus, calcium carbonate, and mercuric iodide are well-known examples. Carbon appears under one form as the diamond, and under another as graphite, with the following widely contrasting sets of properties: the *diamond* is colourless, transparent, has an adamantine lustre, is the hardest of all substances, a non-conductor of electricity, has a sp. gr. of 3.52, and crystallises as octahedra; *graphite* is grey, opaque, has a metallic lustre, is exceedingly soft, a fairly good conductor of electricity, has a sp. gr. of 2, and forms hexagonal crystals belonging to the rhombohedral system. Yet both have the same chemical composition, and both yield carbon dioxide when burned in

oxygen; the diamond becomes graphite if heated in the electric arc. The difference between them is caused by different arrangements of the atoms in the crystals, as was shown by the X-ray method of crystal analysis invented by Sir Wm Bragg and his son Sir Lawrence Bragg. Red mercuric iodide when heated changes into rhombic plates, which the slightest friction changes into octahedral crystals, the colour changing at the same time from yellow to a brilliant scarlet. Sulphur yields transparent amber-coloured octahedra under one treatment, prismatic crystals under another. The terms *trimorphism* and *polymorphism* indicate this phenomenon when the same organism or substance presents 3 or more different forms. See CRYSTALLOGRAPHY.

Dimsdale, Thomas (1712-1800), physician, b. Theydon Gernon, Essex. Work as an inoculator brought him world-wide fame; his *Thoughts on General and Partial Inoculation*, 1776, was trans. into many languages. The Empress Catherine of Russia bestowed upon him a barony, a fee of £12,000, and a life pension for the successful inoculation of herself and her son. He was M.P. for Hertford, 1780-90.

Dinan, Fr. tn in the dept of Côtes-du-Nord and cap. of the arron. of D. It stands on the Rance, 14 m. S. of St Malo, and is built on the summit of a hill at the spot where a high viaduct crosses the riv. It is a picturesque tn, and some of the old walls and gates, and the 14th-cent. castle, still remain, as do many old, winding, narrow streets with wooden houses. The church of St Sauveur contains the heart of Bertrand du Guesclin, who fought in single combat with an Eng. knight during the siege of D. by the Eng. in 1359. D. exports cattle, coal, and wood. Pop. 12,700.

Dinant, picturesquely situated in the prov. of Namur, Belgium, on the R. Meuse. Manufs. beaten copperwork, called Dinanderie, spiced bread called 'couques de Dinant,' woollen goods, etc.; quarries marble. In the early 15th cent. D. was one of the most prosperous tns in Walloon, Belgium, and had a pop. of about 60,000. It was sacked and destroyed by Charles the Bold in 1466, taken by the Fr. in 1554, and burnt and terrorised by the Germans in 1914. On 15 Aug. of that year the Ger. advance guards seized the citadel of D. and crossed to the l. b. of the Meuse. Two hrs later a Fr. brigade retook the tn and drove the Germans back across the riv. Pop. 6,800.

Dinapur, Dinapore, or Danapur, tn of Bihar State, India, which is now connected with and virtually forms part of Patna (q.v.).

Dinarchus (c. 360-c. 290 BC), last of the Ten Attic Orators, b. Corinth. As a metic he could not speak at Athens, but wrote speeches for others. Only 3 of these have survived and were ed. by F. Blass (1888); though of some historical interest, their style has little to commend them. See J. F. Dobson, *The Greek Orators*, 1919.

Dinard (ancient Dinard-Saint-Enogat), Fr. coastal resort in the dept of Ille-et-

Vilaine. It has 2 casinos, and is popular with Brit., Fr., and U.S. visitors. Pop. 8400.

Dinaric Alps, that part of the Alpine system which joins the Julian Alps with the Balkan range. The main chain lies NW. to SE. and divides Dalmatia from Bosnia-Herzegovina. It also separates the basin of the Sava from the dist. drained by the Neretva and other rivs. flowing into the Adriatic. The highest summits are under 7000 ft.

Dindigul, tn of Madras State, India. It is about 30 m. from Madura, and has a citadel on an isolated rock, from the top of which Hyder Ali threw his prisoners. There are sev. tanneries, a large cotton winding factory, and a tobacco factory.

Dindings, The, strip of land in the Malay Peninsula on the SW. coast of Perak, 22 m. long, and comprising also the is. of Pangkor. It lies between lat. 4° 20' N. and long. 100° 32' E. Formerly included in Penang, but retroceded to Perak, partly for convenience of customs collection and partly in recognition of the loyalty of the Sultan of Perak to the Brit. Crown. Pulau Dinding is covered with thick woods, and is noted for its great beauty.

Dindorf, Karl Wilhelm (1802-83), Ger. Hellenist and philologist, b. Leipzig. He resigned a professorship at Leipzig Univ. in order to give all his time to literary work, especially to the preparation (with his brother Ludwig and Hase) of a new ed. of Stephanus's *Thesaurus Linguae Graecae* (Paris), 1831-65. His philological researches into the text of the Gk classics, especially that of the dramatists, contributed greatly to its accuracy and clearness. He ed. a number of these classics, including an ed. of Demosthenes (7 vols.).

D'Indy, Vincent, see INDY.

Dindymene, see CYBELE.

Dingaan, see ZULU. See also DINGAAN'S DAY.

Dingaan's Day, 16 Dec., the anniversary of the decisive defeat of Dingaan, a Zulu chief, by a small force of Boers under Pretorius at Blood R. in 1838. The cause of the conflict thus brought to a close was the treacherous massacre by the Zulus of a party of 70 unarmed Boers under Piet Retief. D. D., now officially known as *The Day of the Covenant*, is looked upon as a day of thanksgiving for the spread of white civilisation in S. Africa.

Dingelstedt, Franz Ferdinand, Freiherr von (1814-81), Ger. poet, dramatist, and novelist. He became famous for his political satires. In 1867 he was made Director of the Opera, and later of the *Burghtheater* in Vienna. His *Lieder eines kosmopolitischen Nachtwächters*, 1840, caused a great sensation. He also wrote a successful tragedy, *Das Haus der Barnheide*, 1856; a society novel, *Die Amazone*, 1868; and some sketches of travel. His *Sämtliche Werke* (12 vols.) was pub. 1877-8.

Dingey, or Dinghy (Mahratta *dinge*), a small row-boat supplied to a ship as an extra, or a collapsible rubber boat carried by aircraft.

Dingle, par. and seaport in co. Kerry, Rep. of Ireland, situated on the N. side of D. Bay, 30 m. SW. of Tralee, and a flatfish and lobster fishing and agric. mkt. centre. D. harbour affords safe anchorage and is frequented by coastal vessels. D. is the most westerly tn in Europe, and the Mt Brandon (3127 ft) area is rich in monuments of great antiquity. D. grew up round a medieval fortress, received a charter in 1685, and has had political and trade connections with Spain from medieval times. Pop. 1540.

Dingley Tariff. The D. T. Act (U.S.A.), after Nelson D. (1832-99), Chairman of the Ways and Means Committee, was passed in 1897 in McKinley's first term. It embodied the Republican doctrine of high protection coupled with reciprocity. There were provisions for reciprocal arrangements with other countries which paved the way for possible reductions by a commercial treaty. In 1909 the D. T. was replaced by the Payne-Aldrich Tariff Act.

Dingo (*Canis dingo*), the warrigal, or wild Australian dog. It is a strong, short-legged dog, sandy-coloured, and not unlike the European fox, being about 40 in. in length, its tail measuring an additional 11 in. It works havoc upon flocks and poultry, and even after it has been tamed seldom abandons its predatory habits. Its fossilised remains have been discovered with those of kangaroos and extinct Australian mammals. This has given rise to the opinion, held by Sir Frederick McCoy, Ogilvy, and others, that the D. must be an indigenous species of Australian fauna. But the existence in Java and India of a pariah dog, very similar in character to the D., has caused others to think that the D. was originally introduced into Australia by Caucasians from Ceylon or Malaya.

Dingwall, royal burgh and tn of Scotland, and cap. of the co. of Ross and Cromarty, situated on Cromarty Firth, 18 m. NW. of Inverness. It is the centre of an extensive agric. area, with cattle and sheep markets, and an important junction to the N. and W., and to the is. of Lewis. Pop. 3503.

Dinka, large tribe of Nilotic Negro people living on both sides of the Nile in the S. Sudan. The chief source of their wealth is their cattle, and their mode of life is a transhumant one.

Dinkelsbühl, Ger. tn in the Land of Bavaria (q.v.), on the Wörnitz, 88 m. NW. of Munich (q.v.). It was once a free city of the Empire, and during the Thirty Years' War (q.v.) it resisted 8 sieges successfully before finally being taken by Gustavus II (q.v.) in 1632. It is a medieval tn with completely preserved walls, towers, moat, and gates. The church of St George is one of the best late Gothic buildings in S. Germany, and there are fine old houses and a castle of the Teutonic Knights (q.v.). Pop. 7500.

Dinnington, coal-mining tn of the W. Riding of Yorks, England, 8 m. SE. of Rotherham. Pop. 7000.

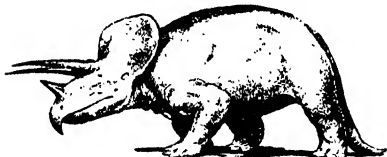
Dinocrates (4th cent. BC), Gk architect of the time of Alexander the Great, who

rebuilt the temple of Ephesus, and was also employed by Alexander in the building of Alexandria.

Dinornis, the Moa, a large extinct flightless bird from New Zealand. It ranged to over 10 ft in height, and probably became extinct after man reached New Zealand. Numerous remains have been found.

Dinosaur Park, gov.-owned area in Alberta, Canada, near the tn of Drumheller, comprising a deep valley some 2 in. wide and over 400 ft deep through which the Red Deer R. runs. The region is rich in fossils of prehistoric creatures and plants of all sizes, ranging from dinosaur skeletons and fossils to petrified oyster shells filled with pure white crystal, fish impressions, and evidence of tropical vegetation. About 60 varieties of prehistoric reptiles are found, preserved by quicksands, in Alberta, and at least 40 scientific expeditions have visited this remarkable area since 1918.

Dinosaurs, a group of fossil reptiles which were dominant during Mesozoic times, and became extinct at the end of that era. They were highly variable in size, some of them attaining enormous proportions (80 ft long, 40 tons in weight),



TRICERATOPS, A HORNED CRETACEOUS DINOSAUR

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while others were quite small. D. were mostly land animals, and there were carnivorous as well as herbivorous types. Early D. were bipedal, and some later forms reverted so, but many herbivorous forms returned to a quadrupedal gait.

D. are divisible into 2 unrelated stocks, the orders Saurischia and Ornithischia. Members of the former group possess a triadate reptile-like pelvis and are mostly bipedal and carnivorous, though some became giant amphibious quadrupedal herbivores. Members of the latter group have a tetradate bird-like pelvis, are mainly quadrupedal, and entirely herbivorous.

The Saurischia are divided into (1) Theropods, including all the bipedal carnivorous forms with long hind-limbs and short fore-limbs (e.g. *Tyrannosaurus*, *Megalosaurus*); and (2) Sauropods, including the large quadrupedal herbivorous and amphibious types with massive limbs, long tails and necks, and tiny skulls (e.g. *Diplodocus*, *Brontosaurus*).

The Ornithischia include a number of varied groups: (1) Ornithopods, Jurassic and Cretaceous bipedal forms (e.g.

Iguanodon), and Cretaceous hadrosaurs with duck-bills; (2) Stegosaur, Jurassic quadrupedal D. with a double row of triangular plates along the back and spikes on the tail (e.g. *Stegosaurus*); (3) Ankylosaur, Cretaceous quadrupedal forms, heavily armoured with bony plates (e.g. *Nodosaurus*); and (4) Ceratopsians, Upper Cretaceous quadrupedal horned D. with very large skulls bearing a neck frill and large horns (e.g. *Triceratops*).

See W. E. Swinton, *The Dinosaurs*, 1934; E. H. Colbert, *The Dinosaur Book*, 1945.

Dinotherium, extinct genus of proboscidean mammals. The lower tusk was well developed and curved sharply downward. The skull was more primitive, and the bulk much more vast, than in the living elephant. Dinotheres have been found in the Miocene and early Pliocene of Europe and Asia.

Dinslaken, Ger. tn in the Land of N. Rhine-Westphalia (q.v.), near the r. b. of the Rhine (q.v.), 23 m. N. of Dusseldorf. It has iron, steel, and coal industries. Pop. 32,000.

Dinton, park in Wilts, England, 9 m. from Salisbury, on the N. slope of the Nadder Valley. Philipps House, owned by the National Trust, was formerly the house of the Wyndham family and was completed in 1815 by Jeffrey Wyatt in the neo-Grecian style, of which it is a very successful example. It stands on rising ground beneath a screen of fine beech trees. Hyde's House, close to the church, was built in the Wren manner, probably about 1725, and incorporates Tudor portions. It is in the older house on the site that Edward Hyde, afterwards Lord Chancellor Clarendon, is said to have been born.

Dinwiddie, Robert (1693-1770), Lieutenant-governor of Virginia. He entered into conflict with the Fr., against whom he sent Maj. George Washington. He built Fort Duquesne, on the site of the present Pittsburgh, Pennsylvania. His health ruined by his ceaseless exertions in connection with the Fr. and Indian wars, he left Virginia in 1758.

Diocesan Court, one of the eccles. courts, a consistory. In every diocese of the Church of England there is a D. C. presided over by the commissary or chancellor who acts as vicar-general for the bishop. Eccles. cases arising within the diocese are here tried. Their former jurisdiction in matrimonial and testamentary matters is now vested in civil courts. See DIVORCE; PROBATE, DIVORCE, AND ADMIRALTY DIVISION.

Diocese (Gk *diokēsis*, housekeeping, management, province), a dist. under the eccles. jurisdiction and care of a bishop. In Demosthenes the word is used for the treasury or finance dept. in Cicero it is applied to the 3 dists. of Cybira, Apamea, and Synnada (added to Cilicia, 56-50 bc); D., from its original meaning 'administration', coming to mean the part so administered. The term was primarily used in the civil administration of the Rom. empire, Constantine the Great

dividing it into 13 D.s. which were subdivided into 120 provs. These D.s. (of which Oriens was the largest, Britain the smallest) were governed by praetorian prefects, proconsuls, or vicars, the provs. by rectors or exarchs. The word in its present eccles. signification was not in common use till about the 9th cent., *parokia* (parish) being the more usual term up to that time. Constantine (AD 306-37) made the eccles. and political divs. correspond, the eccles. D.s. being under a patriarch, the political under a praetorian prefect. Later D. dwindled to mean a single metropolitanate or prov. instead of a group of them, and finally merely the sphere of jurisdiction of any one bishop. In England an Act of Parliament is necessary to create fresh D.s. In the Catholic Church D.s. are erected by the Pope in consistory. See BISHOP; see also J. Bingham, *Origines Ecclesiasticae*, 1840; P. Hinschius, *Das Kirchenrecht der Katholiken und Protestanten in Deutschland*, 1869-97; A. Baudrillart and others, *Dictionnaire d'histoire et de géographie ecclésiastique*, 1912-36.

Dioclea, see TITOGRAU.

Diocletian (Gaius Valerius Diocletianus) (AD 245-313), Rom. emperor, b. Dalmatia, the son of obscure parents; entered the army and served with much success under Aurelian and Probus, later accompanying Carus on his Persian expedition, and at his death in 283 becoming commander of the Imperial Guards of Numerian (q.v.). In the next year Numerian was assassinated by Aper, and D. was proclaimed emperor by the army of the E. at Chalcedon. Carinus had already been proclaimed in Italy, but was defeated and slain, and D. was recognised as sole emperor (285). In 286 he assumed as his colleague in the empire Marcus Aurelius Maximianus, and gave him the title of Augustus. Maximianus took charge of European affairs, and D. of the E. with his cap. at Nicomedia. In 292 Galerius and Constantius Chlorus were also adopted as colleagues, and took up the gov. respectively of Thrace and Illyria (Galerius) and Gaul and Spain (Constantius). D. superintending Asia and Egypt, and Maximianus Italy and Africa. D. retained supreme command. In 297 a peace was concluded with Persia. In 303 D., under the influence of Galerius, issued a severe edict against the Christians, the persecution of whom has left a stain on his memory. After a long illness in 304, he abdicated in favour of Galerius in 305, and retired to Salona in Dalmatia. His ranks high both as a gen. and a statesman. See also ROMAN HISTORY.

Diodati, Giovanni (1576-1649), Calvinist theologian, b. Geneva, whither his parents had fled from Lucca. He was distinguished as a preacher, and as a prof. of Hebrew and theology. Trans. the Bible into Italian and French. His nephew Charles, a schoolfellow and friend of Milton, wrote an elegy on the death of the poet.

Diodon, see GLOBE FISH.

Diodorus (surnamed **Siculus**), Gk historian, b. Agrigunt, Sicily, and lived in

the time of Caesar and Augustus. His work, entitled *Bibliotheca Historica*, consisted of 40 books in 3 sections, the 1st dealing with times previous to the Trojan war, the 2nd ending with the death of Alexander the Great, and the 3rd with Caesar's Gallic wars. Only books 1-5 and 11-20 have come down to us. The work, however, is characterised by a want of order and critical power. Misunderstanding and distortion of fact to adorn a tale, and often also to point a moral, have disguised the historical kernel of this great compilation, which, however, is valuable as a collection of materials the sources of which are lost. There is a text with trans. by C. H. Oldfather and R. M. Geer in the Loeb Library (12 vols., 1933 ff.).

Diodorus of Tarsus, biblical commentator, b. Antioch, where he was taught by the aged Eusebius of Emesa, pupil of Eusebius of Caesarea. D. became bishop of Tarsus, 378. He had great influence over Chrysostom and Theodore of Mopsuestia (q.q.v.).

Diogenes (c. 412-323 BC), Cynic philosopher of Sinope in Pontus. He was the son of Icesias, and on account of the latter's dishonest actions D. had to leave Sinope and take up his residence in Athens. After much persistence, in spite of constant harsh rebuffs he became the pupil of Antisthenes (q.v.), and laid down for himself an excessively austere rule of life, subjecting himself to every kind of self-mortification. Legend asserts that he lived in a tub, though the truth of this statement has been called in question. While on a voyage to Aegina, D. was seized and sold as a slave in Crete, and after being bought by Xenias he became the tutor of his children. It was during this time that he is reported to have met Alexander the Great, causing the latter to remark that if he were not Alexander he would like to be Diogenes. The philosopher is said to have d. at Corinth on the same day as Alexander. His system of philosophy had a practical basis, and he ridiculed all men whose pursuits were not aimed at some practical end.

Diogenes Laërtius, Gk author who lived probably towards the close of the 2nd cent. AD, though little is known about his exact date. He wrote *Lives and Opinions of the Eminent Philosophers* in 10 books (text with Eng. trans. by R. D. Hicks, 2 vols., Loeb Library, 1935), which has been of great value to later writers on the subject. At the same time he made bad use of his information, as his work is not a methodical compilation nor is it an authority on philosophy, though it has preserved some interesting facts. See R. Hope, *The Book of Diogenes Laërtius*, 1930.

Diogenes of Apollonia, Gk philosopher of the 5th cent. BC. He was a pupil of Anaximenes, whose doctrine, that air is the source of all being, he attempted to reconcile with that of Anaxagoras (q.v.). According to this philosophy, all other substances are derived from air—which gives also life and soul to all things—by a process of condensation and rarefaction,

in which mind and matter alike share. Considerable fragments of his work *On Nature* are extant.

Diognetus, *Epistle* to, incomplete Gk work of uncertain date and unknown authorship, but probably of c. AD 150 and addressed to the tutor of Marcus Aurelius. The last 2 chapters are by another hand, identified by Lightfoot as Pantænus (180-210). It is a brief and simple account of Christianity and its distinction from idolatry and Judaism with its sacrificial and legal requirements. It describes it as the self-revelation of God the Creator in his Son, who has come as man to save us and impart to us a new life as citizens of heaven, even while on earth, so that the Christian is to the world as the soul is to the body. It survived until 1870 in a single MS., which perished at Strasburg in the Franco-Prussian war; copies, however, had fortunately been made. It is customarily associated with the Apostolic Fathers (q.v.). See J. B. Lightfoot, *Apostolic Fathers*, 1891; L. B. Radford's annotated ed., 1908; K. Lake, *Apostolic Fathers*, 1913.

Diomede, or **Diomedes**, son of Tydeus. After the death of Adrastus, whom he succeeded as king of Argos, D. led 80 ships against Troy. Bold and enterprising, a favourite of Athene, with her help he wounded Ares and Aphrodite. With Odysseus he had many adventures, and stole the palladium (q.v.) from the acropolis of Troy.

Diomede Islands, group of 3 small is., situated in Bering Strait, about half-way between the 2 continents of America and Asia. The group consists of Ratmanov and Little Diomede Is. and Fairway Rock.

Diomeda, see ALBATROSS.

Dion Cassius (Cassius Dio Cocceianus) (c. AD 155-c. 235), Gk historian, b. Nicaea in Bithynia; settled at Rome in 180; praetor 194; consul c. 220 and 229, after which he returned to his native place, where he d. D. C. was the author of a valuable *Roman History* in 60 books down to AD 229. Of these only books 36-60 survive, covering the period 68 BC-AD 47. There is a text with trans. by E. W. Cary in the Loeb Library (9 vols., 1914-15).

Dion Chrysostomus ('the golden-mouthed') (c. AD 50-c. 115), Gk orator, b. Prusa in Bithynia. He received a good education and travelled considerably when young. After leaving Rome, owing to Domitian's hatred of philosophers, he is said to have visited Mysia, Thrace, and other places, disguised as a beggar. He returned under Nerva, and after revisiting Prusa went back to Rome, where he d. His 80 moral discourses have been ed. by J. W. Cohoon and H. L. Crosby (5 vols., Loeb Library, 1932-51).

Dion of Syracuse (408-353 BC), son of Hipparchus and brother-in-law of Dionysius the Elder (q.v.), who employed him on sev. confidential missions. When Plato visited the court of Dionysius, D. became an ardent disciple of the philosopher. On the succession of the younger Dionysius (367), D. summoned Plato once more to Syracuse to instruct the new

tyrant in the theory of gov.; and indeed Plato hoped that he might realise his dream of the philosopher king. Dionysius, however, had different inclinations; the undertaking failed, and D. was banished. In 357 D. returned at the head of an expedition, expelled Dionysius (356), and succeeded him as tyrant. He was assassinated in 353.

Dionaea Muscipula, the Venus' flytrap, a genus of Droseraceae. The leaves form a small rosette on the ground, and are composed of a lower winged part and an upper expanded part fringed with teeth. Inside the upper part are numerous tiny digestive glands, and 3 long, delicate, hair-like organs. If one of these organs be touched by an insect the sides of the leaf collapse, the teeth interlace, and as the captive decomposes its products are absorbed by the plant.

Dione, one of the Titans, mother by Zeus of Aphrodite. Homer represents her on Olympus welcoming and consoling her daughter when wounded before Troy.

Dionne, Narcisse Eutrope (1848-1917). Canadian historical writer, b. Saint-Denis de la Boutellerie. He was educ. at Sainte-Anne's College, the Quebec Grand Seminary, and Levis College, and obtained his medical degree at Laval Univ. in 1872. He abandoned his medical career to become a journalist and became famous as a historical writer and biographer. His works include a life of Jacques Cartier, 1889, and *Quebec et Nouvelle-France*, 1905-12; *Les Ecclesiastiques et les royalistes français réfugiés au Canada, 1791-1802*, 1905; *Les Canadiens-Français*, 1914.

Dionne Quintuplets, 5 children, Yvonne, Annette, Emilie, Cecile, and Marie, born to Mrs Elzire Dionne on 28 May 1934, at Callander, Ontario. Dr Allan Roy Dafeo (1883-1943) attended Mrs Dionne and achieved fame for his successful delivery of the 5 children. Marie d. in 1955.

Dionysia, festivals of Dionysus (q.v.), especially those held at Athens and elsewhere in Attica. (1) *Little or Rustic D.*, celebrated in many country places with antique rites in the month of Poseidon (Dec.). (2) *Lenaea* (festival of the Maenads), kept at Athens in the following month. Gamelion, with a procession and dramatic shows. (3) *Antheseria*, 11-15 Anthesterion (Feb.-Mar.), was marked by special commemorations of the dead, and at Athens by a symbolic marriage between the wine-god and the king archon's wife. (4) *Great or City D.*, in the month Elaphebolion (end of Mar.), was celebrated with a ritual procession and dramatic contests in the Theatre of Dionysus. (5) *Oschophoria* (i.e. carrying of grape-clusters) in the month Pyanepsion (late Oct.). See L. Deubner, *Attische Feste*, 1932.

Dionysius, patron saint of France, see DENIS, ST.

Dionysius (surnamed *Halicarnassensis*, from Halicarnassus, his bp.), Gk scholar of the reign of Augustus. He went to Rome about 30 BC, where he wrote a hist. of Rome down to 264 BC, with the express purpose of reconciling his Gk compatriots to the yoke of their Rom. conquerors.

The work is still a valuable source of information. The first 11 books have survived almost intact. The remaining 9 are available in fragments and an epitome.

Dionysius (surnamed *Periegetes*, 'the describer of the earth'), Gk poet who lived probably in the early days of the Rom. empire. He wrote a *Periegesis tes Oikoumenes* in 1186 hexameter verses. His work, founded on that of the first scientific geographer, Eratosthenes, caused him to be considered by the later Greeks as the geographer *par excellence*. His work was trans. into Lat. by Festus Avienus and commented by Eustathius. There are eds. in the *Geographi Graeci Minores* of G. Bernhardt, 1828, and by C. Müller, 1861.



E. Buchanan

THE THEATRE OF DIONYSUS AT
ATHENS

Dionysius (self-named in humility *Exiguus*, or 'the Little') (b. c. AD 500), Gk theologian. He went to Rome and became abbot of a monastery, where he made collections of the first 50 canons of the apostles, the canons of 10 councils, and of 38 decretals of the popes, all of which were recommended for use in 800 by Charlemagne. This was the origin of the Canon Law. He introduced the method of counting the years from the birth of Christ.

Dionysius Cato, *see* CATO, DIONYSIUS.

Dionysius Epiphanes, *see* ANTIOCHUS.

Dionysius of Byzantium, Gk poet of the 2nd cent. He wrote elegiac verses and an account of the navigation of the Bosphorus coast-line. Fragments of this work appear in various collections, e.g. in the *Geographi Minores* of Didot.

Dionysius of Colophon, Gk painter who lived about 500 bc. He was a contemporary and rival of Polygnotus of Thasos (q.v.), and was nicknamed 'Painter of Men' (*Anthropopographos*), because he aimed at portraying men as they really were, while Polygnotus gave his figures a touch of ideal or god-like beauty. He painted a portrait of Aristarchus carrying a figure of tragedy.

Dionysius the Areopagite, *see* DENIS.

Dionysius the Elder (c. 432-367 bc), tyrant of Syracuse, in which position he had estab. himself by 405. Apart from his encouragement of literature, the prin. features of his reign were 2 Punic wars (397-396 and 392 bc) and the capture of Rhegium (386), which made Syracuse the greatest power in Europe. His ambitions, however, were checked by his failure in a 3rd Punic war (383-378). In the year of his death he won the first prize with a tragedy at the Athenian festival of Lenaea.

Dionysius the Younger, tyrant of Syracuse, succeeded his father, D. the Elder (q.v.), in 367 bc. He was compelled to leave Syracuse in 356, and went to Locri, which tn he ruled as a tyrant for some years. He returned to Syracuse after the assassination of Dion, but was again driven out in 343, when he retired to Corinth. *See also* DION.

Dionysius Thrax, or the Thracian, Gk grammarian who lived about 100 bc. He taught for some time in Rhodes and then had a school in Rome. He wrote the first scientific Gk grammar, a work which was very popular, and highly valued in ant. times. The best ed. is that of G. Uhlig, 1844.

Dionysus (Bacchus, a Lydian name), ant. Gk divinity representing the productive and intoxicating power of nature. He is believed to have been originally a Thracian fertility god worshipped as a bull with orgiastic rites. The date of his introduction to Greece is uncertain; but his cult spread rapidly and in face of official opposition which is reflected in sev. cult-myths, e.g. that of Pentheus (q.v.). Under the influence of Apollo (q.v.) the orgies (*see the Bacchae* of Euripides) were gradually modified until D. became associated with Apollo at Delphi. Oriental contacts, however, tended to revive the licentiousness of Dionysiac worship in Hellenistic times.

The character of D. led to his early connection with the vine, thence with rites accompanying the grape harvest, and ultimately with tragic drama. The ann. dramatic contests held at Athens in the classical period took place during the Great Dionysia (*see* DIONYSIA) in the Theatre of D., where his priest occupied the presidential seat. For the legend of D. in classical mythology and Gk mystical religion *respectively see* SEMELE and ORPHISM. *See also* W. K. C. Guthrie, *The Greeks and their Gods*, 1950.

Diophantine Equations, so called after Diophantus, a Greek mathematician who lived at Alexandria c. 3-4 cent. AD. His pub. a work called *Arithmetica* that included arithmetic and algebra. His

name has been given to D. E., also known as *Indeterminate Equations*, the type of which is illustrated by the following example. In how many ways can a sum of £2 1s. 6d. be paid in florins and half-crowns? Let x be the number of florins and y the number of half-crowns, then, expressing everything in pence, we have the equation $24x + 30y = 498$, which reduces to the simpler form $4x + 5y = 83$. Dividing by the smaller coefficient 4, this reduces to $x + 1\frac{1}{4}y = 20\frac{3}{4}$, or $x + (y-3)/4 = 20$. Since x and y must be integers, it follows that $(y-3)/4$ is an integer which we can denote by p , and hence $y-3 = 4p$. Giving p the values 0, 1, 2, 3, 4, etc., we find $y = 3, 7, 11, 15, 19$, etc., but from the equation $4x + 5y = 83$ it is obvious that y cannot exceed 83/5 and hence 19 is excluded. Using for y the values 3, 7, 11, 15, the corresponding values of x are 17, 12, 7, 2. Hence there are 4 ways of paying the sum of £2 1s. 6d. in florins and half-crowns. See T. L. Heath, *Diophantus of Alexandria*, 1910.

Diophantus, see DIOPHANTINE EQUATIONS.

Diopside (Gk *dis*, twice, and *opsis*, appearance), a variety of pyroxene, containing no alumina. It is composed of silica (55.7), magnesia (18.5), and lime (25.8).

Diopbase, or Emerald Copper Ore, a rare ore of copper found by analysis to consist roughly of 38 per cent silica, 50 per cent copper oxide, and 12 per cent water. It occurs in beautiful green transparent or translucent crystals, similar in appearance to emeralds.

Dioptr, the unit of refractive power of a lens. The power of a lens in D.s is defined as $100/f$ where f is the focal length in cms, or as $1/f$ where f is in metres. A lens of +1 D. is a convex lens with a focal length of 1 metre. A concave lens has a negative power, e.g. a lens of -2 D. is concave with a focal length of -50 cms. When thin lenses are combined the power of the combination is the sum of the powers of the components. See LENS.

Dioptrics, that part of the science of optics which deals with the refraction of rays of light when passing through media such as glass and water. It treats particularly of the laws governing the refraction of light by lenses. See REFLECTION AND REFRACTION OF LIGHT.

Diorama, see PANORAMA.

Diorite, a granitoid rock found in abundance in Germany and N. America, rarely in England, but frequently in the Scottish Highlands and Galloway. D. is composed essentially of felspar and one or more of the ferro-magnesian minerals, such as hornblende, augite, biotite, or hypersthene. In colour it is greyish-white to almost black. D.s from Guernsey are much valued as a road-metal in the S. of England.

Dioscorea, the chief genus of Dioscoreaceae, is noted for its farinaceous tubers which are grown for food in the tropics and are known as *yams*. *D. batatas*, Chinese yam, is best known.

Dioscoreaceae, family of monocotyledonous plants. They nearly all grow in

the tropics, but *Tamus communis*, the black bryony, grows in Britain and Europe; many are nutritious and others are poisonous.

Dioscorides, Pedacius, or Pedanius, Gk physician, a native of Anazarba, Cilicia, who lived about AD 40-90. He was the originator of the *materia medica* (q.v.). His *De Materia Medica* described over 600 plants and plant principles and is the authoritative work on the *materia medica* of antiquity. It was pub. in Lat. in 1478 and in Gk in 1499; the first Eng. version appeared in 1934.

Dioscuri, see CASTOR AND POLLUX.

Dioscurides, gem engraver who lived about the time of Augustus, whose seal he engraved. He is one of the 4 engravers recorded by Pliny.

Diosgyör, tn of Hungary, a W. suburb of Miskolc (q.v.), in Borsod-Abaúj-Zemplén co. In the Middle Ages it was a tn of importance, and it has a remarkable 14th-cent. castle. There are extensive iron, steel, and engineering industries, and there are thermal springs and lignite mines in the dist. Pop. 27,000.

Diosma, genus of heath-like, evergreen, S. African shrubs, family Rutaceae, often confused with *Barosma*. *D. vulgaris* and varieties, and *D. ericoides*, with white or reddish flowers grow, in a cool greenhouse in Britain.

Dip, or Inclination, the angle which a magnetic needle makes with the horizontal when the vertical plane, in which it moves, coincides with the magnetic meridian (see MERIDIAN, MAGNETIC). The total magnetic force due to the earth acting upon a magnetic needle may be resolved into 2 components, one acting horizontally and the other vertically. When the needle is suspended so as to move in a horizontal plane, as in the magnetic or mariner's compass (q.v.), the horizontal force tends to make it lie along the magnetic meridian, but the vertical force has an inconsiderable effect. When the needle is suspended so as to move in a vertical plane at right angles to the magnetic meridian, the horizontal force can only act in the direction of the axis of suspension, and therefore the needle is only affected by the vertical component, and so stands vertically. When, however, the horizontal component is free to act, the needle takes up a position at an angle to the horizon which increases as the position of the needle approaches the magnetic pole. The D. is subject to secular variation and in London has decreased from a maximum of 74° 42' in 1723 to 67° 9' in 1900. At Abinger, the magnetic station of the Royal Greenwich Observatory, Herstmonceux, it was 66° 41' in 1953 and decreases by about 1' each year. See ISOCLINIC AND ISOCONIC; MAGNETISM.

Dip, in geology, the angle between the plane of an inclined stratum and the horizontal.

Dip-circle, an instrument to measure dip (q.v.) or magnetic inclination, consists of a magnetised needle pivoted on a horizontal axis through its centre of gravity so that it can rotate in a vertical plane. The ends of the needle move over

a vertical circular scale graduated in degrees. The instrument is rotated about a vertical axis so that the needle lies in the magnetic meridian (q.v.). The angle between the horizontal and the magnetic axis of the needle is the dip.

Diphtheria (Gk *diphthera*, a membrane), acute infectious disease caused by the *Corynebacterium diphtheriae*. It has been estab. that there are 3 types of *C. diphtheriae*, the *gravis*, *intermedius*, and *mitis*, so called from the degree of severity of the disease which they cause. D. is acute in onset and is characterised by the formation of a pseudo-membrane, greyish in colour and looking like sodden parchment, at the site of infection. The infection usually attacks the mucous membrane of the throat and upper respiratory passages. Rare cases have been known in which the site of infection has been an open wound or abrasion of the skin. When the larynx is involved the inflammation and oedema of the vocal cords may result in a complete blocking of the windpipe, which must be relieved by tracheotomy (q.v.) if asphyxia is to be prevented. *C. diphtheriae* produces a powerful toxin which is absorbed into the blood stream and is responsible for the more severe features of the disease, such as heart failure and paralysis, which result from its action on the central nervous system. Children are affected more often than adults, although people of any age are liable to be attacked. *D. gravis* is a dangerous disease unless diagnosed and treated early in its course. A certain number of sufferers continue to be carriers of the D. bacilli after recovery from the clinical attack, and these are an obstinate reservoir of infection. D. was first described and named by P. Bretonneau of Tours in 1826. He also introduced tracheotomy for laryngeal D. In 1883 Kelbs and Löffler identified the bacillus. Von Behring's great discovery of the principles of serum treatment in 1890 was quickly followed by the production of an antitoxin made from the serum of horses previously inoculated with an attenuated culture of living D. bacilli. Treatment with the new antitoxin immediately brought about a spectacular fall in the death rate. Antitoxin of a more refined and concentrated kind than the original product is still the main treatment for D. In 1908 Bela Schick introduced the skin test for susceptibility to D. The Schick test consists in the injection of a small amount of diluted diphtheria toxin into the skin: those who are susceptible develop an area of redness at the site of injection, whereas there is no reaction in those who are immune. The ability to distinguish between the immune and non-immune stimulated the search for a prophylactic vaccine that would give immunity to those shown by the Schick test to be susceptible. Earlier attempts to immunise by using small doses of toxin or bacterial vaccine had been unpromising. Von Behring, however, reported (1913) that a mixture of toxin and antitoxin, which the observations of Theobald Smith had previously

shown to be a good immunising agent, could be safely injected into children. W. H. Park, of New York, then became the leader in the campaign for the immunisation of children against D. Britain at first held back, then the experience of the city of Hamilton, Ontario, gave a lead which could not be ignored. After general immunisation had been started there in 1925 the incidence of, and mortality from, D. both fell so steeply that in this large pop. there have been no deaths from the disease since 1930 and no cases since 1933. A. T. Glenn, working in England, produced a series of powerful and concentrated antigens, based upon the toxin-antitoxin principle (the toxoid), finishing up with an alum-precipitated toxoid known as A.P.T. This has since been improved upon by various technical modifications. Although Britain was a late starter in large-scale immunisation against D., the national campaign started in 1940 has achieved phenomenal results. Some 60-70 per cent of school and pre-school children were immunised and cases of D. fell from an average of 60,000 with 2500 deaths in pre-war years to 3531 cases and 156 deaths in 1948. The national figures for 1954 showed an even greater fall, with 266 notified cases and 3 deaths. In London in 1938 there were 4559 cases and 205 deaths, and in 1954 4 cases and no deaths. This striking improvement, however, has done much to remove the fear of this once dreaded disease from people's minds, and as a consequence many parents are neglecting to have their children protected. Immunisation should be carried out soon after the 6th month, and unless the level of immunisations is kept at some 75 per cent of the child population (at present it is at 40-50 per cent) it cannot be long before D. again becomes a menace to the life of the children of Great Britain. See under PATHOLOGY and EPIDEMIOLOGY.

Diphthong (Gk *di*, double, *phthongos*, sound), a compound sound, composed of 2 vowel sounds joined to form 1 sound distinct from either of the 2 original. There are 4 sounds in Eng. which are pure D.s. These are *i* = *a* + *i*, as in the word *aisle*; *u* = *i* + *u*, as in the word *duke*; *oi* = *au* + *i*, as in *joist*; and *ou* = *a* + *u*, as in *south*. Many vowels written as double ones in Eng. are not D.s. in sound.

Diplegia, Infantile, see BIRTH-PALSY.

Dipleidoscope (Gk *diplos*, double, *eidos*, appearance, and *skopein*, to view), an optical instrument for indicating the passage of the sun or of a star over the meridian, used for the purpose of determining the correct time by transit observations. It consists of a triangular prism which has 2 silvered planes and one (in front) unsilvered; one of the silvered planes coincides with the plane of the meridian. The coincidence of the 2 images formed by a single and double refraction of the prism records the transit accurately if the adjustment is correct. Steinhell's 'transit prism' grew out of the work of Bloxam, Dent, and Plössel on the

Diplodocus, genus of Jurassic sauropod dinosaurs (q.v.) belonging to the order Saurischia. They were quadrupedal and herbivorous, 87 ft in length, with massive backbone and limbs, long neck and tail, and a tiny skull. They were probably amphibious, living in swamps, so that the enormous limbs were buoyed up by the water. The vertebrae were cavernous in order to reduce the weight of those parts above water.

Diplomatic Service, British. Great Britain is represented abroad in regard to its international interests by diplomatic agents and occasionally by consuls, though the latter are in general concerned exclusively with the interests of Brit. subjects resident abroad. The former include *ambassadors* or *envoys*, who are officials permanently accredited to a foreign state, and *chargés d'affaires*. A *chargé d'affaires* is either one who acts as deputy for an ambas. during the temporary absence of the latter, or one who is accredited as Brit. representative to some foreign country of minor importance. Ambas. are appointed by and derive their authority from sealed letters of credence (see CREDENTIALS) under the sign-manual addressed to the sovereign or president of the country to which they are accredited, and from instructions under the sign-manual to themselves personally. Ambas. are assisted by various attendants known as *attachés*. These latter have to serve a probationary period, after which they become eligible for appointment as third secretaries. First and second secretaries constitute an intermediate class. All members of the D. S. are expected to take their turn in whatever part of the world their services may be required. Women are now admitted to both the Diplomatic and Consular Services on equal terms with men. There is, however, a general marriage bar which the foreign secretary has power to waive in exceptional circumstances. See Harold Nicolson, *Diplomacy*, 2nd ed. 1950.

Diplomatics. The Gk word *diplōma* (a folded sheet) was used by the Romans first of a licence to travel by the public post, and then of any imperial grant of privilege. Scholars of the Renaissance and later extended it to cover all manner of legal and other official or semi-official documents. D. may therefore be defined as the science of the critical study of non-literary historical sources; and the immediate derivation of the name is from Dom Jean Mabillon's *De re diplomatica*, 1681, which first set forth its principles. D. originally included palaeography (q.v.), but is now restricted to the forms and structure of ant., medieval, and later documents, especially to the criticism and testing of them in the light of rules known to have been regularly observed by draughtsmen at different periods and places. Most of the forms occurring throughout Europe can be traced to those employed by the papal chancery; and these in turn owed much to the practice of the Rom. imperial court. The documents of which D. takes account are

classified as public and private. The former include all that are concerned with gov., e.g. laws, grants, proclamations, judicial records, and pleas. Private documents include charters, i.e. deeds emanating from individuals and such corporate bodies as municipalities and religious houses, as well as the records of manorial courts and other registers. Mabillon's work was followed in England by Madox's *Formulare Anglicanum*, 1702, and in Italy by Maffei's *Istoria diplomatica*, 1727. Another important pub., upon which later works were largely based, is the *Nouveau Traité de diplomatique* by Dom C. Toussaint and Dom D. Tassin (6 vols.), 1750-65. Great advances in the science of D. were made in France during the 19th cent., thanks to the Académie des Inscriptions and to the Ecole des Chartes. England has followed suit with numerous pub. of the Public Record Office (q.v.) and of the British Museum (q.v.) department of MSS. See B. Thorpe, *Diplomatarium Anglicum Aevi Saronici*, 1865; E. A. Bond, *Facsimiles of Ancient Charters in the British Museum*, 1873-8; G. F. Warner and H. J. Ellis, *Facsimiles of Royal and other Charters in the British Museum*, 1903; V. H. Galbraith, *Introduction to the Use of Public Records*, 1934.

Diplopia, see EYE.

Dipnoi (Gk *dis*, twice; *pnōt*, breathing), or **Dipneusti**, a sub-class of bony fishes, is of great interest for its many peculiar features, some of which are rather amphibian in nature. The D. are all extinct but for 3 genera, *Nepceorotodus* (q.v.) of Queensland, *Protopterus* of Africa, and *Lepidosiren* of America, but many fossils belonging to the group have been discovered, all either Palaeozoic or Mesozoic. The importance of the possession of a double-breathing apparatus is seen in all 3 living genera, which have gills as well as a lung-like swimbladder. They are mud-fishes which live in tropical swamps; when the water is adequately oxygenated they breathe by means of their gills, when it has become stagnant by means of their lungs. The D. are fringed-finned bony-fishes (Crossopterygii) and have a pair of tooth plates in the lower jaws which bite against an opposing pair in the roof of the mouth.

Dipole, see AERIAL.

Dipole Moment, see DIPOLES.

Dipoles. When a bond is formed between 2 identical atoms, e.g. X:X, the electron pair denoted by : is equally shared between the 2 atoms, but for unlike atoms, e.g. X:Y, the electrons are likely to be found nearer one atom than the other, depending on the electron affinities of the various elements. For example, chlorine has a greater affinity for electrons than has hydrogen, so that hydrogen chloride can be represented as H:Cl. Thus the electrical centre of the electrons may not coincide with the mass centre of the 2 atoms, leading to the existence of a small electrical doublet known as an electrical dipole moment. This is defined as the product of the electronic charge and the relative dis-

placement of the positive and negative centres, e.g.

H_2 or $H:H$ has zero dipole moment

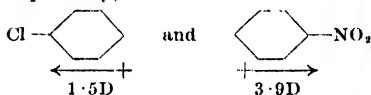
 $\delta_0^+ \quad \delta_0^-$

HCl or H:Cl has a D. M. of 1.03D where δe represents a fraction of the full electronic charge e , which is 4.803×10^{-10} e.s.u.

NaCl or $\text{Na}:\text{Cl}$ has a D. M. of $(4.803 \times 10^{-18}) \times (2.81 \times 10^{-4})$ cm., i.e. 13.5×10^{-18} e.s.u. or 13.5D , where D is a Debye unit of D. M. of 10^{-18} e.s.u.

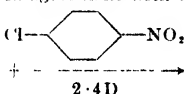
D. M. exist in all molecules, covalent and electrovalent, providing that these molecules do not possess a centre of symmetry. Thus a symmetrical molecule like carbon tetrachloride (CCl_4) has no D. M., although each carbon chlorine bond has an appreciable moment.

D. M. are thus due to permanent polarisation and act along the bond between the atoms or radicals and are additive like vector quantities, e.g. the D. M. of nitrobenzene and chlorobenzene in benzene solution are 3.9 and 1.5D respectively, viz.



in which the direction of the D. is marked by an arrow with its point towards the negative end. Hence the resultant D. M. of p-chloronitrobenzene should be 2.4D and this is in agreement with experiment.

viz.

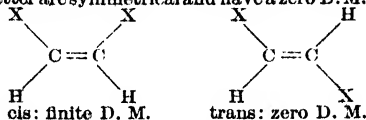


Much valuable information has been derived from the study of D. M. and the data may be examined under the following headings.

Structure of molecules.—Zero D. M. has been found for the simple diatomic gases (e.g. H₂, O₂, N₂) and for symmetrical triatomic gases (e.g. CO₂, N₂O) showing both types to have a linear structure. Similar values have been found for tetratomic and pentatomic molecules (e.g. boron trihalides, tin and silicon tetrahalides), thus showing triangular and tetrahedral structures respectively.

Finite D. M. have been found for many unsymmetrical molecules like H_2O , which must be V-shaped, and for NH_3 , which must be pyramidal.

Geometrical Isomers.—Distinction between cis- and trans-isomers of simple ethylene derivatives is possible since the latter are symmetrical and have a zero D. M.

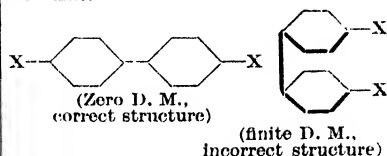


Also the D. M. of α -penta-acetyl glucose is

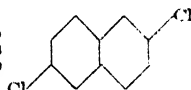
greater than that of the β -compound, thus supporting the chemical evidence that in β -glucose the H atoms and OH groups are arranged alternately above and below the plane of the pyranose ring.

Free rotation about a single bond.—The ethylene dihalides ($X.CH_2.CH_2.X$) have no D. M. in the vapour phase but have a finite D. M. under ordinary conditions, showing the possibility of varying configurations by free rotation about the C—C bond.

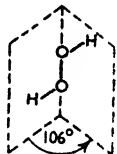
Coplanarity and collinearity of certain rings.—Zero D. M. were found for the 4:4'-dihaloeno derivatives of diphenyl, so that the original Kaufler folded formulae, which required large D. M., were incorrect, and replaced by the linear extended formulae.



The absence of a D. M. for 2:6-dichloro naphthalene shows the 2 rings to be coplanar.

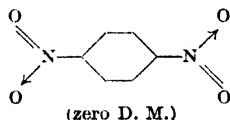
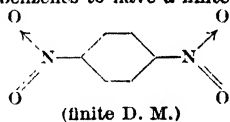


Measurement of valency angles. The D. M. of hydrogen peroxide shows the OH bonds to be at an angle of about 106° .

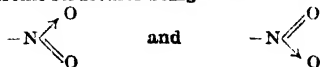


Proof of resonance.---The original proposal that the nitro group should be

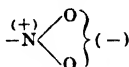
represented as $-N \begin{array}{c} \nearrow O \\ \searrow O \end{array}$ requires the p-dinitro benzenes to have a finite D. M.



The experimental value was zero so that the nitro group is a resonance hybrid, the extreme structures being

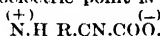


so that the real structure is the symmetrical form



Planar configuration of certain metal valencies.—Measurement of the D. M. of the 2 nickel benzyl methyl glyoximes shows one value to be zero, the other finite. This is explicable if the 2 structures are cis- and trans-isomers, thus requiring the nickel valencies to be planar.

Zwitterion structure of the amino acids.—The dielectric constants of aqueous solutions of amino acids were found to be greater than that of water, suggesting a D. M. for amino acids, so that the structure of an amino acid, $\text{R.NH}_2\text{CH}_2\text{COOH}$, at its isoelectric point is



Dipper, or Water-ousel, the popular term for passeriform birds of the genus *Cinclus*. Both wings and tail are short, the beak is fairly short and straight, and the general colour of the bird is brown, the throat and part of the breast being white. It inhabits streams of Europe, Asia, and America, feeding on molluscs and insects, and is a good diver. *C. cinclus* is the common dipper, found in parts of the Brit. Isles as well as in Europe, N. Asia, and NW. Africa.

Dippers (religious sect), see BRETHREN. CHURCH OF THE.

Diprotodon, a giant Australian Pleistocene marsupial, about the size of a large rhinoceros, with diprotodont dentition and a huge skull. It is the largest known marsupial.

Dipsacaceae, family of dicotyledonous herbs and sub-shrubs, mostly Mediterranean; with opposite leaves without stipules, 4 or 5 parted flowers in cymes or heads, inferior ovary, and fruit an achene. Genera include *Cephalaria*, *Dipsacus*, *Morina*, and *Scabiosa*.

Dipsacus, family Dipsacaceae, genus of prickly biennial herbs, native to Europe, Asia, and N. Africa. *D. fullonum*, the teasel; its 2 sub-species *sylvestris*, the wild teasel, and *fullonum*, Fuller's teasel, still grown as a crop for its persistent seed heads used for raising nap on certain cloths; and *D. pilosus*, the small teasel, are all found in Britain. A rosette of basal leaves the first year, the plants throw up prickly, angled stems, with blunt, conical purplish flower-heads, held erect.

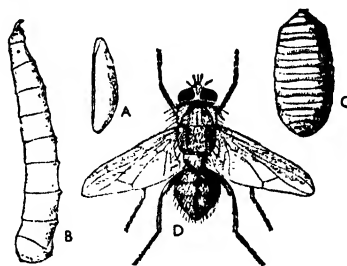
Dipsas, genus of Amblycephalidae, are snakes which have much in common with the family Colubridae. The members of the genus are found in S. America and are harmless, though in appearance they resemble poisonous species.

Dip-sector, astronomical reflecting instrument, similar to the sextant in principle, for ascertaining the dip of the horizon.

Dipsomania, see ALCOHOLISM; DRUNKENNESS; INEBRIATES.

Diptera (Gk *di*, two; *pteron*, wing), large order of insects, of which over 40,000

species have been classified, but are not believed to nearly represent all of the species which are in existence. They are distinguished from other insects by the presence of 1 pair of wings, and the hind-wings are represented by 2 pin-like, knobbed processes called halteres. The wings are never very large, they are transparent and membranous. The flattened head is united to the body by a long and very flexible neck, the divisions of the thorax are greatly fused, the mouth-parts are adapted for piercing or suction, and often have a retractile proboscis. The metamorphosis of the flies is complete, the larva being usually a maggot which has no thoracic legs and only a minute head; the organs it contains differ completely from those of the mature creature, and in



DIPTERA

A, Egg, magnified 10 times; B, larva, magnified 4 times; C, puparium, magnified 4 times; D, horn-fly (*Haematobia serrata*), Europe, magnified 18 times.

undergoing its metamorphosis the contents of the body break down into a creamy substance from which the new organs of the adult are developed. It is usually only the females which have blood-sucking habits, and their larvae are nearly always aquatic. The D. are divided by zoologists into 2 suborders, according to the way the adult emerges from the pupa case. In the *Orthorrhapha* the case splits straight down the back, while in the *Cyclorrhapha* the case has a circular tip which is pushed off by an expansible sac on the head of the emerging fly.

Dipterocarpaceae, family of dicotyledons, contains over 300 species of evergreen Indian trees. The calyx enlarges greatly during the ripening of the fruit, which is usually a nut. All the species produce such substances as resin and oil: *Dryobalanops camphora*, a kind of camphor, and *Dipterocarpus trinervis*, a resin which is made into plasters for ulcers in Java. Many give valuable timber.

Dipterus, the oldest and most primitive genus of lungfish (Dipnoi), from the Devonian; it had a heterocercal tail, 2 dorsal fins, cosmoid scales, and internal nostrils comparable with those of the crossopterygians (q.v.). The characteristic tooth-plates are commonest as fossils.

Dipteryx (family Leguminosae), genus of tropical Amer. evergreen trees, of which *D. odorata* (*Coumarouna odorata*) yields the tonka or tonquin beans, used in perfumery, snuff, tobacco, etc.

Dipyah: 1. Two tablets made of carved ivory, etc., and united by leather hinges; their inner surface was covered with wax. The Romans wrote in them the names of the consuls and prin. magistrates. D.s containing names of the living and dead, especially saints and martyrs, were placed on the altar for a *memento* in the Mass of the early Church.

2. A similar folding tablet made to hold twin portraits or other paintings. Cf. the Wilton D., containing a beautiful portrait of Richard II (National Gallery, London). See TRIPTYCH.

Dipyre (Gk *di*, two, and *pur*, fire), silicate of alumina and lime, which, when subjected to heat, first becomes phosphorescent and then fuses: it occurs as a transparent, tetragonal mineral in the Pyrenees.

Dirac, Paul Adrien Maurice (1892-), Eng. mathematician and physicist: educ. univ. of Bristol and Cambridge; F.R.S., 1930, and Lucasian Prof. of Mathematics, 1932. In recognition of his valuable work in connection with quantum mechanics, he was in 1933 awarded the Nobel Prize (with Edwin Schrödinger). He predicted the existence of the positron which Blackett and Anderson discovered about 2 years later, and he advanced the theory of the spinning electron. His *Principles of Quantum Mechanics* was pub. in 1930.

Dirae, see EUMENIDES.

Dirce, wife of Lycus, King of Thebes. She was dragged to death by a wild bull, to whose horns she had been bound by Amphion and Zethus, sons of Antiope, the divorced wife of Lycus.

Direks, Henry (1806-73), civil engineer and author, inventor of the optical illusion 'Pepper's Ghost.' As an apprentice in a mercantile firm he studied mechanics, chem., and literature, and later became a practical, then a consulting engineer and member of the Brit. Association. He wrote *Popular Education, Inventions and Inventors, Scientific Studies*, etc.

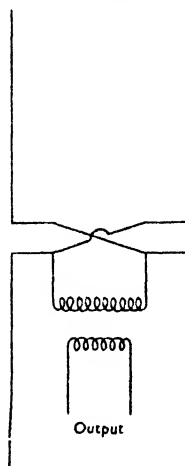
Direct Action. A phrase in popular use in England about the year 1910, chiefly in relation to labour unrest and the Women's Suffrage Movement. Like many slogans invented in times of agitation it has no precise definition, but varies, according to the mood and character of the user, from a small local strike to a violent national uprising. For some years before the First World War an increasing distrust of gaining their ends by constitutional methods was steadily growing among wage-earners at home and abroad; while such bodies as the Independent Workers of the World and the Syndicalists were increasing their activities and urging swifter methods of change. Possibly the most prominent exponent of D. A. in the Brit. Isles to-day is the I.R.A.

Direct and Retrograde, terms used in astronomy to indicate the apparent motions of a planet as seen from the earth. Its motion is said to be D. when it is pro-

gressing from W. to E. towards its E. elongation, and R. when it is travelling towards its W. elongation, apparently in the opposite direction. See PLANETS.

Direct Current, electric current flowing uniformly in one direction in a circuit. Originally used in all supply systems, the application is now mainly restricted to electrochemical plant and traction, and to private generating stations and battery-charging plant. Recently, interest in long-distance D. C. transmission has revived on account of stability problems in alternate current lines. See ELECTRIC MACHINES; TRANSMISSION, ELECTRIC POWER.

Direction-finding, determination of the direction of arrival of radio waves by a



ADCOCK AERIAL

special aerial. Radar (q.v.) is a special version of D. not involving the co-operation of the radio station to be located. D. is used as an aid to navigation, and equipment for this purpose is carried in vessels of any size and all passenger-carrying aircraft. The usual equipment is a rectangular loop aerial with its plane vertical, which can be turned round a vertical axis. The frequencies used by the transmitting stations are of the order of 500-2000 kc/s. When the loop faces the incoming waves, the voltages induced in the vertical sides are equal in phase and amplitude but act in opposite directions round the loop and thus cancel out; the received signal is minimum. When the plane is parallel to the direction of propagation, the voltages differ in phase owing to the difference in distance travelled; the resultant voltage is the vector difference between the two, the signal is a maximum. The minimum signal is always used, being the sharper. At the aerial position of minimum signal, the bearing of the ship is indicated on an

azimuth scale set to true N. Normally the waves are vertically polarised, i.e. the electric vector is vertical. If horizontally polarised waves, reflected from the ionosphere, reach the aerial, voltages induced in the horizontal sides distort the signal. This can be overcome by use of the Adecock aerial, since the voltages induced in the horizontal sides are equal and opposite and so cancel out. See **BLIND LANDING**. See also R. Keen, *Wireless Direction Finding*, 1937.

Director, in law, see **COMPANY; PUBLIC PROSECUTOR**.

Directorium, or *Ordo*, a list printed every year by authority of a Rom. Catholic bishop; it contains directions to ecclesiastics as to the office for each day.

Directory (1795-9), the name given to the gov. of France which followed the Convention and which ruled from 27 Oct. 1795 until its overthrow by Napoleon and Siyès on the 18th Brumaire (i.e. 9 Nov.) 1799. The constituent bodies of the D. were the Council of Five Hundred and the Council of the Ancients, and the D. proper or *directoire exécutif* was elected by the former council from a list presented by the latter council. The members were Barras, Carnot, Lépeaux, Letourneur, and Rewbell. The D. gave its name to the *directoire* style of dress and furniture.

Directory, alphabetical list or index giving various kinds of information. Most useful in Great Britain is the Post Office Directory, compiled for dists.; the largest is the London one, which contains information under the following headings: (1) *Court D.*: names of people occupying private houses, arranged alphabetically, but persons having any rank or title precede others of the same name; (2) *Official D.*: names of persons holding any gov. or law office; (3) *Street D.*: names of the prin. streets of London, with their terminals and intersections with other streets named, and a selection of the in-habs.; (4) *Law D.*: list of judges and official staff of all the courts and of the police force; (5) *Parliament D.*: list of all peers of the U.K., members of the House of Peers, members of the House of Commons and names of places for which they sit; (6) *Postal D.*: all information connected with the transmission of letters, parcels, etc.; (7) *City, Municipal, Parochial, and Clerical D.* gives a large amount of miscellaneous information; (8) *Commercial D.*: list of wharves, booking-offices, railway-carriers, etc.; (9) *Banking D.*: list of bankers, etc.; (10) *Suburban D.*. The Post Office also pub. the *Telephone D.* Other D.s include *Who's Who*; *Who Was Who*; *Burke's Peerage, Baronetage, and Knightage*; *The Catholic Directory*; *Crockford's Clerical Directory*; *The Medical Register*; *The Directory of Directors*; and *Kelly's county, town, trades, and other Directories*. Corresponding D.s are pub. in most countries of the world.

Directory of Public Worship, collection of rules for public worship in England and Scotland drawn up by the Westminster Assembly of Divines (q.v.) in 1644, intended to supersede the Book of Common Prayer.

Dirige (Lat. imperative *dirige*, direct thou), the first word of the opening antiphon used in Rom. Catholic offices for the dead, *Dirige Domine*; thus the term is applied to a piece of music which is suitable for funeral ceremonies.

Dirhem, Arabic silver coin equivalent to about 45 grs. The Fr. gramme is now called D. in Turkey. See **DRACHMA**.

Dirigible, see **AIRSHIP**.

Dirk, proper name for the dagger of the Scottish Highlander. It was worn either within the vest or with the pistol at the belt. The blade was some 5 in. long, and separated by a 'shoulder' from the short, cylinder-shaped handle, which was usually of horn or wood, and was often richly carved with interlacing ornament. It is worn to-day with ceremonial Highland dress.

Dirschau, see **TCZEW**.

Dirt Beds, see **PURBECK BEDS**.

Dirt-track Racing, see **SPEEDWAY RACING**.

Dis, see **HADES**.

Disability, term in law which is applied to a person who is not allowed to do a particular thing. This D. may be due to physical causes, as in the case of those mentally deficient, or to the fact that a person is under age, or to a point of law, as in the case of an alien.

Disabled Persons. After the First World War the resettlement in civil life of men disabled during the war became a national problem. In 1915 an appointments board, under the ministry of labour, was constituted to place disabled officers and men. During the war and for some time after the Armistice disabled officers and men were given a course of training to fit them for civil employment in those cases where they could not follow their previous employment. To encourage employers to absorb the disabled the King's National Roll was inaugurated by Royal Proclamation in Aug. 1919. Those who engaged D. P. in the proportion of 5 per cent of their total staff of employees were given a certificate and were entitled to use a special seal on their business stationery. Such organisations as the Brit. Legion, St Dunstan's Hospital for the Blind, etc. did good work for D. P. War-disabled men, through the operation of the Joint Substitution Board, were given preference over other applicants for work in gov. depts. At the beginning of the Second World War it was anticipated that the largely voluntary organisation which had existed up to that time for the resettlement of D. P. would prove inadequate. In 1941 the ministry of labour and national service set up a number of vocational training and rehabilitation centres, and under an interim scheme officers of the ministry undertook to place D. P. in suitable employment. At the same time an inter-departmental committee was appointed to inquire into the whole question of resettlement and rehabilitation. The committee's report was pub. in Jan. 1943 (White Paper Cmd 6415), and legislation was introduced later the same year. As a result the Disabled Persons (Employment) Act, 1944, became

law on 1 Mar. 1944. For the purposes of this Act a disabled person is defined as one who on account of injury, disease, or congenital deformity is substantially handicapped in obtaining or keeping employment, or in undertaking work on his own account, of a kind which apart from disablement would be suited to his age, experience, and qualifications. The Act applies to Brit. subjects of either sex over the age of 16, and in certain conditions to non-Brit. subjects also. The ministry provides vocational training or industrial rehabilitation courses at centres run as a gov. charge, or arranges for suitable courses to be taken at technical colleges and institutes. In this case the fees are paid by the gov. The ministry may also pay the expenses incurred by those attending such courses, or contribute towards them. The ministry maintains a register of D. P. Registration is voluntary. Employers are obliged under the Act to employ a quota of registered D. P. The quota for any particular employer is determined by the ministry and bears relation to a standard percentage fixed for general application in consultation with employers' and workers' organisations. Special percentages are fixed for particular industries, as necessary. In some types of employment vacancies are exclusively reserved for registered D. P. only. In the administration of the Act the minister of labour is assisted by a national advisory council.

Disarmament. Strenuous but generally fruitless attempts have been made since the First World War to secure some mitigation of the evil of unrestricted competition in armaments, beginning at the peace negotiations at Paris in 1919. International principles were laid down in the covenant of the League of Nations to that end.

During the period 1920-3 the only effective agreements for the limitation of armaments were, however, negotiated outside the League, and of these the most important was the Five Power Pact signed at Washington in 1922, by which the U.S.A., Great Britain, France, Italy, and Japan agreed on certain naval and air limitations. In 1924 an attempt was made to find a solution in the Geneva Protocol. Another solution was provided by the Locarno treaties (q.v.), which conduced to a measure of stability in Europe until Germany denounced them in 1936.

During 1926-7 the League appointed a Preparatory Commission on D. preliminary to a World Conference. As regards land armaments, it made an attempt to limit the effectives of the sev. signatories and to cover arms and ammunition by budgetary limitation, but reached no unanimity. Subsequently there were limited disarmament treaties between individual states (e.g. Three-Power Pact of 1930 between Britain, the U.S.A., and Japan, limiting naval armaments), but the international conference which began at Geneva in 1932 on D., though it passed various general resolutions, achieved nothing concrete. By 1934 D. as a general policy was dead, though efforts

were still being made by some states to secure some limitation of armaments.

Early in 1934 the Brit. Gov. issued a Memorandum stating that it was ready to yield to the Ger. demand for a short-service army of 300,000 men, but held out for the prohibition of 'para-military' forces by constant supervision; and it repeated an earlier proposal for the abolition of military aircraft, subject however to adequate supervision of civil aviation to prevent misuse for military purposes. Not only Germany but Japan, the U.S.A. and Russia were opposed to any system of international supervision or control of their armaments. In May the general commission of the Disarmament Conference met in Geneva; the chief feature of the conference was the Amer. proposal of 'a universal pact of non-aggression' subject to the proviso that the U.S.A. neither took part in European political negotiations or settlements nor used its forces for such settlements—a proposal which was a mere repetition of the Kellogg Pact. The Russian Gov. however, through Litvinov, rejected this proposal and favoured security and a practical system of guarantees—a counter proposal to which Simon returned an emphatic negative; and on 11 June the commission adjourned *sine die*. In 1935 Great Britain concluded an agreement with Germany under which the latter country was permitted to build up a navy to one-third of the strength of the Brit. Navy. In 1936 Great Britain decided on an all-round increase of armaments (see White Paper issued in Mar. 1936), her action being hastened by the uncertain situation which prevailed in Europe, through the militant policy of Italy, the denunciation of the Locarno Treaty by Germany, and the aggressive policy of Japan in the Far E. Furthermore, Japan claimed parity with Great Britain and the U.S.A. for her naval armaments.

No further serious attempts at D. were made, and the international situation steadily deteriorated, culminating in the outbreak of war in 1939. At the conclusion of the Second World War the world was confronted with the weapon of atomic power and the problem of controlling it, and the related question of D. again came to the fore. The subject was actively discussed at the General Assembly of the United Nations which met in New York in the autumn of 1946. The question of a troop census of all nations was debated, but only when this was abandoned was it possible for the political committee of the United Nations to draw up a resolution for presentation to the general assembly. This resolution was adopted by the assembly by acclamation on 14 Dec. 1946. By its terms an early general regulation and reduction of armaments and armed forces was recognised. It also contained a recommendation that the Security Council should expedite practical measures to this end, to be generally and not unilaterally observed, together with provision for an international convention for the control and inspection of armaments and armed

forces. The prohibition of atomic and all other major weapons of destruction, both present and future, was stated as an urgent objective. In fact, however, though innumerable proposals and counter proposals on D. have been raised by the W. powers and the Soviet Union since 1946, both in the United Nations and at various international conferences, the aims of the resolution of Dec. 1946 remain (1957) entirely unrealised. In Nov. 1951, for example, in the United Nations Assembly, Russia rejected the W. powers' proposals for D., which envisaged control of all forms of weapons, and countered with proposals advocating the actual prohibition of atomic weapons. The following month there appeared to be agreement between the 3 W. powers (France, Britain, U.S.A.) and Russia on the generalities of a D. plan, but subsequent debates showed that this was limited and superficial. Then, as in the future, the W. powers were insistent on detailed methods of international inspection of D. being settled before promises were made on the limitation or prohibition of weapons, atomic or otherwise; whereas Soviet resolutions tended to be more sweeping in their advocacy of prohibition, etc., but noticeably vague on the details of inspection and enforcement.

D. was raised at the Four-Power Conference in Berlin in Jan. 1954; and again at Geneva in July and Oct. 1955. But no agreement was reached. In Mar. 1956 Anglo-Fr. proposals for D. in 3 stages were pub. In June of the same year Bulganin, in a personal message to Eisenhower, made new Russian D. proposals on familiar Soviet lines, but subsequent international tension in E. Europe and the Middle E. has tended to push the question of D. into the background.

Discharge, see ABSCESS; BANKRUPTCY; ELECTRIC DISCHARGE.

Discharge (military), the release of a serving soldier from further obligations of military service under the terms of his enlistment. In the Brit. Army a soldier on enlistment undertakes to serve the sovereign so long as his services are required within the period for which he agrees to serve. At the end of the agreed period he may claim his discharge unless a state of war exists or the reserves are called out on permanent service. If he is serving overseas, his period of service may be extended by 12 months. The Crown has the right to discharge a soldier before he has completed his legal period of service, and the grounds for discharge, e.g. medical unfitness, misconduct, inefficiency, services no longer required on reduction of estab., are laid down in Queen's Regulations. A soldier may also purchase his discharge, the minimum amount being £20 with higher rates according to the conditions and length of service. A soldier serving on a regular engagement cannot purchase his discharge until he has completed service equal to his National Service liability. A National Service man cannot purchase his discharge. All men discharged from the

Army are given a certificate of service unless discharged for misconduct.

Disciplina Aroani (Lat. 'discipline of the secret'), a term used in the 17th cent. to describe the system of reserve practised by the Christian Church during the first few centuries, by which the mysteries of the faith were concealed from unbelievers and the unbaptised. No trace of it is found till the end of the 2nd cent., and it began to die rapidly at the end of the 6th cent. Strong traces of it remain in the Gk liturgy. Baptism and the Eucharist were considered the great Christian mysteries, and the latter was divided into a 'Liturgy of the Catechumens' and a 'Liturgy of the Faithful.' The latter included the consecration and communion, and from it the unbaptised were excluded. See P. Battifol, *Etudes d'histoire et de théologie positive*, I, 1906.

Discipline, see MILITARY LAW.

Disco, is. on the W. coast of Greenland. It is 70 m. long and about 50 m. wide. Godhaven is a harbour in the S. of the is.

Discoidea, see ECHINODERMATA.

Discount, amount of money deducted from a sum paid before it is due. Thus if a bill of £110 is due a year hence at 10 per cent, the banker deducts simple interest on £110 at the given rate, i.e. £11. Instead of £10 as in true D. D. is also applied to stock if the price is below the nominal value; thus if £100 stock can be bought for £95 cash, it is at D. of 5 per cent.

Discovery, legal term denoting disclosure by parties to an action of documents in their possession relevant to matters in dispute. The parties are ordered by the court to exchange lists of their documents (usually supported by affidavits to the effect that such lists are exhaustive). The purpose of D. is to ascertain what documentary evidence will be produced at the trial. Those documents which are 'privileged' (i.e. counsel's opinions, witnesses' written statements, and correspondence between the parties and their professional advisers) are excluded from D.

Discovery Committee, Colonial Office committee which was formed in 1923 with the primary object of attempting to place the whaling industry on a scientific basis. Its other objects were to render service to navigation by conducting a hydrographic survey of the whaling areas, to inquire into the resources of whaling regions from the point of view of fisheries, and to add to scientific knowledge of the sea. For this work the royal research ship *Discovery I* made investigations in the vicinity of the Falkland Is. between 1926 and 1927, and the research ship *William Scoresby* and the royal research ship *Discovery II*, a steel-built boat, have made sev. voyages in Antarctic waters since then. The chief investigations were directed to a study of the habits and haunts of whales, their rate and location of breeding, and related topics, with the view to securing data for regulating the industry. This had become an urgent matter owing to the increasing possibility of the extermination of the whale, and is of especial importance to the Falkland Is. dependencies, where

whaling is almost the sole industry, and a lucrative one. The *Discovery I* found that distribution was governed largely by that of the small creatures on which the whale feeds, and that therefore if large tracts are found in which these creatures are scarce, no accumulation of whales can be expected. Direct evidence as to migration of whales is sought by marking whales with numbered darts, which, when the whale is eventually caught, show the course travelled. Whale-marking has been carried out by the *William Scoresby* by means of darts fired into the back of the whale.

At the end of 1930 the D. C. reported that the *Discovery II* had carried out a complete investigation and hydrographical survey of the S. Sandwich Is., this being the first official visit made since the is. were declared Brit. Ter. by Letters Patent of 21 July 1908. Thus the ship had rounded off a chapter of Antarctic hist. associated with the historic names of Cook and Bellinghausen. In 1936 the *Discovery II* deviated from her third voyage of research to the Antarctic in order to rescue the Amer. explorer, Lincoln Ellsworth. In 1949 the D. C. was reorganised as part of the National Institute of Oceanography. See ANTARCTIC AND ANTARCTICA; ANTARCTIC EXPLORATION.

Discus (Gk *diskos*, disk): 1. Circular plate of stone (or metal), in ant. times from 8 to

Games. The D. was held in the athlete's right hand, resting against the forearm, and thrown like a quoit. Sometimes a kind of spherical quoit was similarly used, with a thong passed through a hole in it. A copy of Myron's famous 'Discobolus' is in the Brit. Museum (according to Gardiner the attitude is not strictly correct), and there are also copies in the Vatican and the Palazzo Lancelotti at Rome. The bronze statue in Rome was presented by Mussolini to Hitler in 1939, but in 1948 was reclaimed by the It. commission sent to Germany to find It. masterpieces which fell into the hands of the Germans, and is now restored to Rome. As used in modern times the D. is made of birch wood, with a metal centre piece. It weighs about 4½ lb. and is thrown from a circle of 7 ft. The world record throw, 194 ft 6 in., was made by F. E. Gordien (U.S.A.) in 1953. See ATHLETICS.

2. Name for the paten in the Eucharistic rite of the E.; unlike the W. paten it is supported by a stem and base.

Discussion, term in Rom. law, denoting the exhaustion by the creditor of all legal means of enforcing payment from the prin. debtor before taking proceedings against the person secondarily liable, i.e. the surety. In Scots law the term is also used in 'D. of heirs', the proceedings against the heirs for debts contracted and left unpaid by the deceased.

Disease Carrier, see CARRIER (DISEASE).
Diseases, Notification of, see NOTIFICATION.

Diseases of Animals Act. The prin. function of the Act is to control certain contagious diseases of animals (including certain species of birds—mainly poultry and birds of the parrot family). It also provides for the welfare of animals during transport. The Act gives power to the Minister of Agriculture, Fisheries, and Food to make orders for the purposes of the Act. Some of these orders are of temporary duration—such as those which deal with outbreaks of foot-and-mouth disease and fowl pest. Diseases which are subject to official control measures are: anthrax, cattle plague (rinder pest), foot-and-mouth disease, contagious bovine pleuro-pneumonia, bovine tuberculosis, brucellosis in cattle (Malta fever and contagious bovine abortion), glanders and farcy, epizootic lymphangitis and certain forms of mange in horses, sheep pox, sheep scab (mange), swine fever, atrophic rhinitis of pigs, rabies, fowl pest and allied diseases (including psittacosis).

Although some of the most formidable diseases in the above list have been eradicated from Great Britain for many years past, measures are in force to prevent their reintroduction through importation of animals and products from countries where these diseases still exist. Local authorities and the police are charged with enforcing the provisions of the Act and its orders, but the Ministry maintains a large staff of veterinary surgeons dispersed throughout the country to assist local authorities and to investigate cases of suspected scheduled disease. Veterinary research laboratories are



MYRON'S DISCOBOLUS

A copy in the British Museum

12 in. in diameter, weighing 4-5 lb., used for hurling from a fixed mark over the greatest possible distance as a gymnastic sport and exercise among the Gks and Roms. Disk-throwing was included with jumping, foot-racing, spear-throwing, and wrestling in the *pentathlon* of the Olympic

maintained to undertake research into many diseased conditions in animals and to assist the 'field staff' in diagnostic duties.

Disestablishment, the annulling of the special status and privileges which a particular religious communion has enjoyed by favour of the State. Disendowment, a usual concomitant, is, however, separable in idea from D. The estab. of the Church of England rests not so much on any particular Act or Acts of Parliament as upon the whole interrelated list of Church and State in this country (see ENGLAND, CHURCH OF). The Crown appoints bishops and deans. Certain bishops sit in the House of Lords. The Church of England has certain privileges and duties in relation to national and civic affairs, of which the coronation of the sovereign is the most important. Estab. does not necessarily mean that grants are received from the State. The income of the Church of England is derived from Church endowments and voluntary subscriptions. In France the Rom. Catholic Church was disestablished during the Revolution, reinstated by Napoleon in 1801, and the union was repudiated unilaterally by the State in 1906. In Great Britain the Church of England as estab. in Ireland, where the people were largely Rom. Catholics, was disestablished by a Bill of 1869 which came into force in 1871. The archbishops and bishops ceased to possess the right to seats in the House of Lords, and the rights of patronage were abolished. In the case of private patronage compensation was made, and all offices which carried personal precedence with them were retained for life. Attempts to introduce a Welsh D. Bill began in 1895. The Liberal attempt in that year failed, but in 1903 another Bill was introduced as a result of the findings of the Royal Commission appointed in 1906. The Bill was finally passed by the Commons in the early part of 1913. In the following year it passed into law to come into operation in 1915, but the outbreak of war in 1914 led to the postponement of the measure, and it was not until 1920 that the Welsh Church was disestablished. In Scotland, where the people are mainly Presbyterian, the 2 great divs. of the Scottish Church—Estab. and Free (or United Free)—coalesced in 1929 on a unique basis, viz. complete independence of the State in all spiritual matters and internal gov., along with a definitive transference of the auct. endowments to the United Church. The Eng. Church in India was part of the Estab. Church of England till 1927, when the Indian Church Act disestablished it. The Church of India, Pakistan, Burma, and Ceylon is now self-governing, but it still recognises Canterbury as the mother see. European reps. of recent times, such as Germany, Portugal, Poland, Czechoslovakia, follow the example of the oldest rep., Switzerland, in adhering to Cavour's principle of a 'free Church in a free state.' In the U.S.S.R. the Soviet gov. was at the outset hostile to organised religion, and the Orthodox Church was consequently

disestablished and disendowed. See also CHURCH.

Disfranchisement, see ELECTIONS.

Disinfectants, agents used to kill disease germs with the object of preventing the spread of infectious diseases. There are 3 classes of substances used to counteract bacterial action, whose functions overlap to some extent: they are antiseptics (a.v.), D., and deodorants. Antiseptics act by destroying the germs or neutralising their poisons; deodorants act by disguising the smell or changing the composition of noxious gaseous products without necessarily destroying germs; but D., which are usually applied to clothing, furniture, etc., must, in order to be effective, destroy all germs associated with the disease to be combated. The process of disinfection generally commences with the destruction of organic masses, as excreta and discharges, as soon as possible, and the burning of all inexpensive or much-soiled articles of clothing, and proceeds to subject all articles suspected of contamination to the action of some chemical or physical agent of a germicidal nature. When the articles are placed in a sealed room, an effective disinfecting agent is formalin, which has a particularly penetrative power, but has little action on colouring matter or metals other than iron. Sulphur dioxide was formerly much used, but the penetrative power is less than that of formalin, and there is some doubt as to the dry gas being an effective germicide, though many vermin are readily destroyed by it. The application of considerable heat is the most effectual method of disinfection known. When applied in the form of hot air there is danger of scorching articles of clothing; but steam, at a temp. of about 120° C. and a pressure of 5 lb., has no harmful effects on colours and fabrics. Public disinfecting stations have usually 2 chambers; the clothing, etc., is placed in a cage mounted on wheels so that it can be run from the steam chamber to the drying chamber, where the articles are handled by a different staff and conveyed in different wagons from those connected with the collection of contaminated articles. Liquid D. are used for cleansing articles in constant use in sick-rooms, for treating drains and sinks, etc. The manganeses and permanganates of sodium and potassium, chloride of lime, carbolic acid, corrosive sublimate, etc., are used for this purpose. D. lose their power when much diluted, and the vapour of carbolic acid, though its odour gives a sense of security, has no particular germicidal effects. In recent years the range of disinfectants has been widely extended by chemical research, and some of the new varieties, such as hexahydroresorcinol, are 300-400 times as effective as carbolic acid.

Disinfecting Stations.—By various Acts of Parliament, notably the Public Health Act, 1875, it is incumbent upon sanitary authorities to cleanse and disinfect houses and their contents if they are likely to cause or spread disease. Bedding, clothes, and similar articles which are extremely likely to do this are removed to D. S. and disinfected at the public expense. If

necessary they are totally destroyed, in which case compensation is given. The usual agent in D. S. is steam. Local authorities have power to disinfect persons also who through filth, disease, or vermin are a danger and a nuisance to the public.

Disjunction, in logic, the relation of the sev. terms of a disjunctive proposition, which is the statement of alternative possibilities. It is a matter of dispute among logicians whether the disjunctive form necessitates the mutual exclusiveness of the alternative predicates. A disjunctive judgment is one of the form 'A is either B or C,' when either 'A is B' or 'A is C' must be true. See *Welton's Logic*, II.1.209.

Dislocation, or Luxation (loosening), in surgery, the displacement of one bone from another with which it is articulated (commonly called 'putting out of joint'). Usually the result of an accident, but may be caused by disease or be congenital (occurring before birth). Displacements may be partial or complete. They are classified as 'simple' when the skin is unbroken, 'compound' when the displaced bone pierces the skin. A complicated D. is a displacement of a bone, accompanied by severe local lesion of the soft parts or fracture of the bone. The process of righting a D. is called 'reduction.' Reduction of recent luxations can generally be accomplished by surgical manipulation, but in old and long-neglected cases it involves an operation. The shoulder is the joint most frequently dislocated, or the hip in the lower extremity. There is a congenital form of dislocation of the hip in which the head of the femur (or thigh bone) on one or both sides is not seated in its proper position in relation to the pelvis. This is a condition of faulty growth and not one resulting from injury before or during birth. It occurs more frequently in girls than boys. It may not be noticed until the child starts to walk, when the deformity becomes obvious. Treatment consists in splinting the limb in a position which will correct the deformity.

Dismal Swamp, large marsh about 500 sq. m. in extent in Virginia and N. Carolina, U.S.A. There are many trees growing there, mostly cypress, black gum, pine, and cedar. It is being gradually reclaimed, canals having been cut through it, the longest of which connects Chesapeake Bay and Albemarle Sound.

Disney, Walter Elias (1901-), Amer. artist and film producer, b. Chicago. He worked on a farm and, later, in an ambulance corps in France during the First World War. He studied drawing in Chicago and in 1923 went to California. His first great film success was *Mickey Mouse*, whom he introduced in a number of short film cartoons together with Minnie, Pluto the dog, Donald Duck, and other animal characters. His first full-length cartoon was *Snow White and the Seven Dwarfs*, 1937, based on the well-known fairy tale by the brothers Grimm. His next was Colloidi's *Pinocchio*, an lt. classic; other full-length films followed, notably *Fantasia*, 1940, *Saludos Amigos*, 1941, *Song of the South*, 1947, *Cinderella*,

1950, *Alice in Wonderland*, 1951, *Peter Pan*, 1953, *Lady and the Tramp*, 1955. Recently D. has been concerned with the production of documentaries on natural hist., his 2 outstanding films being *Living Desert*, 1953, and *Vanishing Prairie*, 1954. Later films include *Jawy Crockett*, *The Great Locomotive Chase*, and *Jawy Crockett and the River Pirates*. D. has won sev. Academy Awards for the best cartoons and documentary features.

Dison, small industrial tn in the prov. of Liège, Belgium, N. of Verviers. Pop. 9700.

Disorderly House, see NUISANCE.

Dispart, in gunnery, the difference between the radius of the base ring at the breech of the gun and the ring at the swell of the muzzle. An allowance for D. is necessary in determining the beginning of the graduations on the tangent scale. The line which is drawn from the circumference of the base to that of the muzzle is known as the line of metal; the angle subtended by the D. at the base of the gun is equal to that which, in a vertical plane passing through the axis of the bore, would be contained between the latter and the line of metal. A special D. sight, raised in the centre of the gun between the trunnions, is used when the line of metal gives a large D.

Dispensation, in a wide sense, may be taken to mean the licence of a sovereign power exempting a particular person from any obligation imposed by the law. In Great Britain the Bill of Rights abrogated the assumption of this power by the Crown, and though it survives in the shape of the prerogative of pardon and, more indirectly, in acts of indemnity, it is exercised in a strictly constitutional manner. In a narrower technical sense D. means the granting of a licence or the licence itself to do what is forbidden by a canon of the Church, or conversely, to omit something which is commanded. In the Rom. Catholic Church D.s may be granted by the legislating authority or any superior authority: thus the Pope, his legates, and others deputed by him may dispense from any merely eccles. laws, but not from the divine or natural law, or in such a way as to injure the rights of third persons. A Rom. Catholic bishop may dispense from his own diocesan laws, or, under a faculty from the Pope, from universal laws of the Church. In England the Archbishop of Canterbury formerly had a considerable dispensing power, but it is now exercised chiefly in the shape of special licences for marriages. Bishops can still grant D.s to clergymen from the law against holding pluralities and residence away from their parishes.

Dispenser, person skilled in preparing medicines from prescriptions. To practise as a D. a person must first have passed examinations held under the auspices of the Pharmaceutical Society and he must also be registered under the Pharmacy Acts. The practice of dispensing was not treated as a distinct profession from that of the doctor before the 17th cent. A modern D. must possess wide knowledge and a considerable degree of skill.

Dispersion, in optics, the decomposition of light into rays of different refrangibility. The light we receive from the sun is commonly called white light, but it can be shown that white light consists of various colours. If a pencil of the sun's rays is allowed to pass through an aperture in the shutter of a dark chamber, it will form an image of the sun on a screen placed to receive it. If, however, a prism of flint glass be interposed horizontally, the ray appears to be spread out and is received on the screen as a series of colours at some distance from the position of the previous image. The explanation is that the light is refracted or bent on entering the glass and again on leaving it, and as some of the components of white light are more refrangible than others, they take up different positions on the screen. It is usual to distinguish 7 colours, violet, indigo, blue, green, yellow, orange, and red, of which violet is the most refrangible and red the least. When prisms of different materials are used, spectra are formed of different lengths, i.e. spread out or dispersed in different degrees, but having the same colours and usually in the same order. When artificial light is thus dispersed through a prism, all the colours of the spectrum may not be seen; but the colours are found in the solar spectrum, and in the same order. If the artificial light is yellow, for instance, the dominant colour in the spectrum will be yellow; and such colours as blue, indigo, and violet may be very faint or missing altogether. If the light from the dispersing prism is caught on a concave mirror, so that the rays can be brought to a focus again, the combined rays will produce a light similar to that of the source, thus showing that the colours are simply components of the original light. The composition of white light can also be demonstrated by colouring a disk in sectors with the same colours in the same proportions as they appear in the solar spectrum, and then rotating the disk rapidly so that the retina retains the sensation of all the colours at the same time; the result is something approaching to white light.

Anomalous dispersion.—Some substances produce spectra in which the colours are seen in unusual positions. If a prism be made enclosing one of the aniline dyes it is found that the extent of refraction is greater for some of the colours of longer wave-length than for colours of shorter wave-length, so that the order of the colours is different from that in an ordinary spectrum. This shows that refrangibility can have an anomalous dependence upon wave-length, at any rate for substances with special absorptive properties.

Displaced Persons, people who were uprooted from their homes during the Second World War, either as forced labourers or prisoners of war, by the Nazis, and those who were in exile from Soviet-occupied ter. By the end of 1945 the Allied armies and the U.N. Relief and Rehabilitation Administration (UNRRA) (q.v.) had between them returned over 5,000,000 D. P. to their homes. But there

still remained at that time over a million of these unfortunate persons, chiefly Poles, Ukrainians, Yugoslavs, and refugees from the Baltic States, who were unwilling or afraid to return to their home countries, owing to the Communist control of them. In Dec. 1946 the General Assembly of the U.N. voted by 35 to 5 to establish an International Refugee Organisation (I.R.O.). The I.R.O., created in July 1947, took over the work of relief from UNRRA after the latter had been dissolved. Of the 205,000 D. P. resettled in 73 countries in 1948 the U.K. took more than a third, the rest being taken by Canada, Belgium, and the U.S.A.—in that order. Subsequently the U.S. decided to accept 200,000. The Amer. Bill excluded Jews and others who were not D. P. as at 22 Dec. 1945, or, in other words, D. P. status depended on having been taken into a D. P. camp by that date. The large number of Jewish D. P. was rapidly reduced during 1949 by emigration to Israel. On 1 Jan. 1951 the office of the U.N. High Commissioner for Refugees was estab. under U.N. auspices, and this office took over responsibility for the 'hard core' of approximately 100,000 D. P. who still remained unsettled when the I.R.O. was wound up in Jan. 1952. Over 60,000 were still unsettled in 1956.

Displacement, *see* TONNAGE.

Displacement, Electric, or electric flux density. Consider a disk-shaped cavity in a dielectric (q.v.) in a manner similar to that discussed under INDUCTION, MAGNETIC (q.v.). If an electric field, E , acts perpendicularly to the flat faces of the disk, the $E \cdot D \cdot D$, is defined as the sum $E + 4\pi P$, where P is the polarisation of the dielectric (or dipole moment per unit vol., induced or permanent). Thus D is equal to the force acting on unit charge located in the cavity. In an isotropic medium P is numerically equal to the charge per unit area on the flat face of the cavity. It should be noted that E , P , and D are all vectors.

When a voltage is applied to a condenser, a current flows in the wires while the condenser is charging up. In order to construct a self-consistent formal theory of the associated electric and magnetic phenomena (*see* ELECTROMAGNETIC WAVES) it is necessary to assume that this current is continuous through the dielectric (or even vacuum) between the plates. This 'displacement current' is given by the rate of change of charge on one of the plates of the condenser. It can be shown that this rate of change is proportional to the corresponding rate of change of D in the dielectric.

Disposition, in Scots law, is the name given to any writing by which the proprietor of a feu (fee) or heritable estate (in land), or of a personal right in any property heritable or movable, or of incorporeal heritable property (such as a reversionary right), makes over his property to another. Strictly, the transference of a personal right is specifically known as assignation in contradistinction to D . Many changes have from time to time been made in the essentials of a form

of D. Since the Conveyancing Act, 1874, the customary scheduled form, after the formal parts, conveys the property subject to any burden (q.v.) which may affect it, assigns the rents, and binds the person disposing to relieve the disponee of all feu-duties and public burdens, and to consent to the registration of the D. The creation of a new feu as opposed to transmissibility of a feu is by charter and not by D.

Disputation, exercise of argumentative skill very common in the old univs., a proposition being made which some would attack and others defend. Among famous D.s may be mentioned those between Knox and Kennedy (1562) and Laud and Fisher (1623).

Disraeli, Benjamin, see BEACONSFIELD, EARL OF.

D'Israeli, Isaac (1766-1848), miscellaneous writer, b. Enfield, Middx., of Jewish parentage. He was educ. at Amsterdam and Leyden, and at an early age determined, in spite of parental opposition, to become an author. His first work, a *Defence of Poetry*, in verse, was pub. in 1790, and in the following year he issued the well-known *Curiosities of Literature*. This was so successful that further vols. were issued by him at different periods of his life. *Calamities of Authors* appeared in 1812-13, and *Quarrels of Authors* in 1814. Two years later he wrote an *Inquiry into the Literary and Political Character of James I.*, and between 1828 and 1831 he pub. his *Commentaries on the Life and Reign of Charles I.*, at once his most ambitious and his best work. In 1817, in consequence of a quarrel with the synagogue, d'I. withdrew from the congregation, and in that year he caused his children to be baptised. Many years later, in his *Genius of Judaism*, 1833, he wrote enthusiastically of the Jews in early days, but claimed himself to have outgrown the superstitious practices still adhered to by his contemporaries. See Benjamin Disraeli's preface to *The Works of Isaac d'Israeli*, 1858-9.

Disruptive Voltage, the voltage causing (usually violent) breakdown of insulation between 2 electrodes. The D. V. depends on the insulation material, the distance between the electrodes, their shape, and the way in which the voltage has reached the value at which breakdown occurs. Tests are usually made with impulse voltage, a single steep-fronted wave, the voltage rising to maximum in a few microseconds and falling off more slowly. The value of protective gaps on transmission systems depends on accurate knowledge of their D. V., and on proper co-ordination (q.v.).

Diss, tn of Norfolk, England, situated on the Waveney, 20 m. SW. of Norwich. It was formerly noted for the manuf. of worsted and hemp cloth. There are malting works, also manuf. of brushes, etc., and large weekly livestock, poultry, and corn markets. John Skelton, the author, was a native of the tn. Pop. 3500.

Dissection (cutting apart), term used to represent those processes of separation of the parts of a body which are necessary to

show their formation and their relationship to each other. It is, therefore, a branch of anatomy (q.v.), and so one of the divs. of the science of biology (q.v.). Although of great importance in all its branches, it is in connection with human anatomy that it has its greatest value. Democritus and, later, Hippocrates are supposed to have had some knowledge of D., but Aristotle was the real founder of the art of D., although his work was almost certainly confined to the D. of animals. Erasistratus (250 bc) was probably the first to dissect human bodies, performing his work on the bodies of criminals. The progress, however, was slow, owing to the overwhelming prejudice which existed and still exists against the practice of dissecting human bodies. The consequent difficulty in obtaining subjects caused anatomists to have to rely, in the main, upon D. of lower animals, but in 1832 the Anatomy Act was passed, which provides that the bodies of unclaimed dead shall be handed over to the medical schools. See ANATOMY; VIVISECTION.

Disseisin, see SEISIN.

Dissenters, see NONCONFORMITY.

Dissociation, in chem., is the term applied to the reversible decomposition of a substance by heat. Thus dinitrogen tetroxide has the formula N_2O_4 at ordinary temps. but on heating it splits up into molecules of NO_2 ; these recombine on cooling, forming N_2O_4 again: $N_2O_4 \rightleftharpoons 2NO_2$. To indicate the reversibility of the change the reversed arrows \rightleftharpoons are used instead of the sign of equality =. At high temps. water-vapour dissociates into hydrogen and oxygen: $2H_2O \rightleftharpoons 2H_2 + O_2$. Similarly ammonium chloride vapour is found not to consist of NH_4Cl molecules but of a mixture of ammonia, NH_3 , and hydrogen chloride, HCl , D. having taken place: $NH_4Cl \rightleftharpoons NH_3 + HCl$. If D. results in the formation of an increased number of molecules, increase of pressure hinders D. If, however, there is no increase in the number of molecules, pressure is without effect, as, for example, in the action $2HI \rightleftharpoons H_2 + I_2$, the D. of hydrogen iodide.

Electrolytic D. refers to the separation from one another of the ions of electrolytes when dissolved in water or some other solvent. Thus when solid sodium chloride, consisting of an assemblage of positively charged sodium ions and negatively charged chlorine ions, is dissolved in water, the ions separate from one another and become mobile.

Dissolution (of Parliament), see PARLIAMENT; (of partnership), see PARTNERSHIP.

Dissonance, see MUSIC.

Distaff, stick or staff to which material for spinning, as cotton, flax, etc., was fixed, in the method of spinning by hand. The D. was held under the left arm, and the fibres, as they were drawn from it, were spirally twisted with the right hand. During the process of spinning the thread was wound round a revolving reel.

Distemper: 1. (Fr. *détrempe*, lt. *tempera*). Originally any fluid medium for mixing with pigments, later restricted to glutinous

substances, such as size, white or yolk of egg, gum-water, fig-tree sap, honey, etc. The pigments were ground up with these and water and applied to a smooth surface of dry plaster (not damp as in the case of frescoes) usually spread on wood or canvas. D. painting was known very early in Egypt, Babylon, and Nineveh, and used by the Gks for interior decoration. Until replaced by the oils of the Van Eycks, it was the ordinary method of painting in the highest depths of art. In Italy its use continued till 1500, and early Flem. artists constantly employed it. When treated with oil-varnish such paintings are hard to distinguish from oils. They are precise in form and outline, and the rapid drying of the colours prevents blending of tints. D. is still used for scene-painting and in preparing wallpaper.

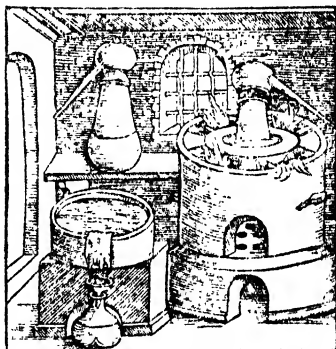
2. Disease, especially of animals. *Canine D.* is a virus infection of the dog tribe which is a relatively mild catarrh-like condition, although it is frequently complicated by other organisms which give rise to clinical D. having various manifestations. When the nervous system is affected the dog may exhibit convulsions followed by twitchings of various parts of the body (Chorea) or varying degrees of paralysis. Hard pad disease is now considered to be allied to D. Vaccination of puppies with a vaccine prepared from an egg-adapted virus gives a high degree of immunity. *Feline D.* or feline enteritis is unrelated to canine D.

Distich (lik *dis*, twice, *stichos*, line), a pair of lines of verse, making complete sense. The term is a synonym for 'couplet' (q.v.), but of somewhat wider application, as the lines need not be metrically similar.

Distillation, process which consists of converting a solid or liquid substance into the gaseous form and afterwards condensing the vapours to a liquid form, in order to purify the substance or separate its components. The process was known to the ancients, who devised ingenious forms of apparatus. The essential parts of a distilling apparatus are a retort or still, in which the substance to be distilled is heated to vaporisation, a condenser, in which the vapours are cooled to a liquid form, and a receiver, in which the condensed liquid, or 'distillate,' is collected. The temp. at which a substance boils depends upon the pressure exerted upon it, and therefore it is necessary, in the case of liquids which decompose at a temp. below their boiling-point, to reduce the pressure so that they may boil at a suitable temp. The simplest form of distilling apparatus consists of a glass retort communicating with a receiving flask by a straight tube gently sloping downwards and enclosed by a wider tube through which cold water is run, entering at the lowest point and leaving at the highest. To present a larger surface to the cooling action of the water, the condenser is often flattened or twisted into a spiral form, or 'worm.' A long, wide glass tube or air condenser may be used for liquids with high boiling points.

Another method sometimes employed is that of *Steam D.* Thus aniline, a liquid which boils at 184° C. under atmospheric pressure, if mixed with water and heated, distils off together with water when steam is passed through the mixture, and by condensing the mixed vapours the 2 immiscible constituents aniline and water are obtained. This method is particularly useful for the purification of tarry and dirty preparations in which one of the components happens to be volatile in steam.

Fractional D. is a process which aims at separating components of the original liquid which have different boiling-points. This is achieved by using a dephlegmating



DISTILLATION

From a 16th-cent. book

column (see DEPHLEGMATOR). In the D. of coal tar, the dehydrated material is heated in a wrought-iron cylinder fitted with a thermometer, and the vapours are condensed in cast-iron cooling-pipes laid so as to have a continuous fall to the receivers. As the process continues the temp. rises and the less volatile substances are driven off until only the pitch remains as residue. The distillate is collected in fractions at different stages of the process, and such substances as 'first runnings,' 'light oil,' 'middle oil,' and 'heavy oil' are differentiated. These are afterwards separately fractionated. For the D. of alcohol from roine and from a malt wort, see BRANDY; COFFEY'S STILL; WHISKY. The D. of sea-water to procure water for drinking purposes is of importance in considering the equipment of ships, and all big liners carry apparatus for this purpose.

In large-scale operations 2 types of D. are employed, the continuous and the discontinuous. In the continuous method the liquid to be distilled is fed into the still at a constant rate as D. proceeds, and conditions are so arranged that the cooling of the vapours and the heating of the liquid in the still are carried out at as steady a rate as possible. By the continuous method, large amounts of material

can be dealt with. In the discontinuous method, which is more suitable for small-scale operations, the D. of a quantity of liquid is allowed to proceed until it is at an end. The process may then be repeated with fresh supplies of material. The method has the advantage that plant construction is simple, and costs are low. See J. Reilly, *Distillation*, 1936.

Distinguished Conduct Medal (D.C.M.), awarded to warrant officers, non-commissioned officers, and men of the Brit. Army. First introduced in 1854 as an award for distinguished conduct by other ranks in the Crimean War, it was placed on a permanent basis in 1862. The medal carries with it an annuity.

Distinguished Flying Cross (D.F.C.), instituted in 1918 as a decoration for officers and warrant officers in the R.A.F. for acts of gallantry when flying in active operations against the enemy. The Air Force Cross (A.F.C.), 1918, was instituted for bestowal on airmen as in the case of the D.F.C., for acts of courage or devotion to duty when flying, although not in active operations against the enemy. The **Distinguished Flying Medal (D.F.M.)**, 1918, and the **Air Force Medal (A.F.M.)** were designed for warrant officers and non-commissioned officers for equivalent services to those for the D.F.C. and A.F.C. respectively. The bestowal of the above 4 decorations was extended in 1941 to members of the Fleet Air Arm.

Distinguished Service Cross (D.S.C.) was instituted in 1914 in substitution for the **Conspicuous Service Cross**, 1901, for bestowal on all officers of the Brit. Navy below the rank of lieutenant-commander and on warrant officers.

Distinguished Service Medal (D.S.M.) was instituted in 1914 for the petty officers, men, and boys of all branches of the R.N. and for non-commissioned officers and men of the Royal Marines, and for all other personnel holding corresponding positions in the service afloat. In 1942 its bestowal was extended to men of the Mercantile Marine.

Distinguished Service Order (D.S.O.). This order was instituted by royal warrant on 6 Sept. 1886. It is an order of military merit and was founded in order to recognise special services of officers in the Brit. Navy and Army; it was later extended to officers of the R.A.F. and Mercantile Marine. It has only one class, and holders of this order carry after their names the letters D.S.O. Its numbers are unlimited and the companions of the order rank next in precedence after the companions of the 4th class of the Royal Victorian Order. The decoration itself consists of a white and gold cross with a red enamelled centre which bears the imperial crown surrounded by a laurel wreath. The ribbon is red, with blue edges. See also DECORATIONS.

Distomum, see LIVER-FLUKE.

Distraint, see DISTRESS.

Distress, taking of goods or cattle out of the possession of a wrongdoer into the custody of the party injured, for the purpose of procuring satisfaction for the wrong committed. The most usual injury

for which a D. may be taken is that of non-payment of rent. But the remedy may also be resorted to for the payment of taxes, rates, and duties, as well as to obtain compensation for damage done by cattle wandering over one's grounds. As between landlord and the tenant a D. cannot lawfully be made after the tenant tenders to his landlord the full amount of the arrears. Various statutes and judicial decisions have resulted in the exemption of a large number of things from D. Some of these are *absolutely* privileged, e.g. fixtures; things in actual use; wearing apparel and bedding of the tenant or his family, and tools of his trade if valued at under £5; machines used in cotton, woollen, and silk manufs.; goods delivered to the tenant in the way of his trade; and, in the case of tenants under the Agricultural Holdings Act, hired machinery and breeding stock. Some things, like the tools of a man's trade beyond £5 in value, are privileged only if there be other sufficient distrainable goods on the premises. By an Act passed in 1908 the goods of an under-tenant who pays a rent equal to the full ann. value of the premises or part of the premises occupied by him are exempt from D. for the rent due from his lessor to the superior landlord; and by the same Act the goods of a lodger and those of any other person not being a tenant of the premises, or having any beneficial interest in any tenancy of the premises or any part thereof, are also exempt from D. in respect of the rent due from the tenant to his landlord. Goods comprised in a hire-purchase agreement (except in the case of machinery on an agric. holding) or in a bill of sale, or belonging to the husband or wife of a tenant, are not exempt from D. No D. can be taken until the day following the day on which rent is made payable, and it must be taken between sunrise and sunset. No previous demand for the arrears is necessary in the absence of express agreement to that effect. Under the National Insurance Act, 1936, D. must be postponed in the case of a tenant who is an insured person where a doctor certifies that a D. would endanger his life. D. is usually levied through a certificated bailiff armed with a D. warrant. Goods distrained may be sold at the end of 5 days, and after notice to the tenant. By the Limitation Act, 1939, goods may not be distrained in recovery of rent which is in arrear more than 6 years, unless the liability has been acknowledged during that time by the tenant in writing to the landlord or his agent. See F. A. Enever, *History of the Law of Distress*, 1931; J. P. Eddy, *The Law of Distress*, new ed. 1939.

Distribution, see ECONOMICS.

Distribution, Census of. By the Statistics of Trade Act, 1947, the Board of Trade was authorised to take a C. of D. and other services in any prescribed year. The first of these was taken in 1951 for the year 1950 and covered 684,764 retail and related service trade estabs. and 55,701 wholesale trade estabs. in Great Britain; total persons engaged were 3,136,534 in retail and service trades and 790,266 in

wholesale trades. Pub. of results began in 1952. Policy in regard to future censuses of production and distribution was considered by the Verdon Smith Committee, whose *Report* (Cmd 9276) was pub. in 1954.

Distribution, Electric Power. A well-planned D. network should supply consumers at a voltage not exceeding or

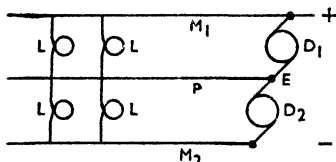


FIG. 1

falling short of the nominal values by more than a small fraction, and a fault or short circuit in any part should not

crossings into a 'mesh network.' If a feeder substation fails, supply is ensured through the mesh. This system is now recommended for dists. with load exceeding 1 MVA per km². The above principles apply to networks in factories, hospitals, and dept stores, as well as to tns, industrial areas, and rural dists.

In d.c. systems, feeders (and some distributors) are of the 3-wire type. Assuming a supply voltage of 230 V, 2 230 V generators, D₁ and D₂, are connected in series at the power station, the voltage between the positive terminal of D₁ and the negative of D₂ being 460 V, and 3 lines, 2 'outers,' M₁ and M₂, and 1 middle, P, are run as shown (Fig. 1). If the load is divided equally between circuits M₁P and P M₂, the return current and outgoing current in P are equal and opposite and cancel out. In case the load on one circuit changes, P will only carry the out-of-balance current. If the full load is 46 kw., a 2-wire, 230-V system will require 2 cables carrying 200 A.

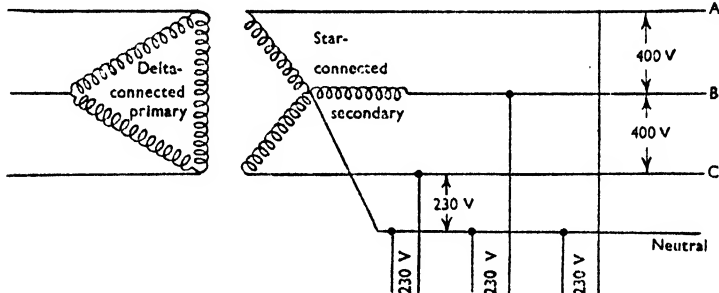


FIG. 2

affect supply elsewhere; reasonable protection against interruption of supply should be afforded. Standard voltage in Great Britain is 230+6 V for lighting and 400 V for power. The rational solution to the problem is to run a number of 'feeders' from the busbars of the control station to conveniently placed substations from which 'distributors' are taken for tapping by 'service lines' to consumers' premises. The feeder system may be a 'ringmain,' practically an extension of the busbars round the dist., tapped at the substations, from which the distributors radiate out. A fault in one section or substation does not interrupt supply elsewhere as each substation is fed from both sides. A modification is the double-loop system, in which 2 cables run in parallel through the circuit; each substation is connected to both cables, but one section of the main cables is left open. If a fault occurs in any section, that section is isolated and the previously open section is closed. In the radial system, separate feeders run radially from the busbars to the substations and the distributors are interconnected at all

The 3-wire system requires 2 'outers' carrying 100 A and a middle of small capacity only. The substations in a d.c. system are mainly D. boxes, the incoming feeder connected through switches to the busbars from which the distributors are taken through fuses.

In a.c. systems, the substations are transformer stations, the feeders being 3-phase lines at 3 kV, 6 kV, or 10 kV. Industrial dists., highly electrified rural areas, and large tns with sev. generating stations are supplied from a high-voltage interconnected transmission network; the D. is in sev. stages, a primary (33-10 kV) feeder system from which a secondary (6-3 kV) system is supplied, this in turn serving the D. networks. The latter are usually 3-phase 4-wire, the 4th wire (neutral) being taken from the neutral point of the star-connected transformer secondary (Fig. 2). In Great Britain phase-to-neutral voltage is 230 V, with 400 V between the phases. On the Continent the 380/220 V is common. As far as possible the load is divided evenly between the phases. The substations are provided with circuit-breakers and fuses

are inserted in the distributor network. In rural areas overhead lines on wooden poles are common, and transformers are often mounted on the poles. See **THREE-PHASE SYSTEM**; **TRANSFORMERS**; **TRANSMISSION**; **GRID SYSTEM**.

Distribution, Statutes of. Acts which settled the distribution of an intestate's real and personal estate. They are now all repealed by the Administration of Estates Act, 1925, which, *inter alia*, changed the rules of intestate succession which had become familiar from their long estab. References to any S. of D. in a deed of gift or will coming into operation after the end of 1925 will be construed as references to Part IV of the new Act, and references in such an instrument or will to statutory next-of-kin will be construed—unless the context otherwise requires—as referring to the persons who would receive benefits under the provisions of the new Act. The old rules of intestate succession are of merely historical interest to-day, though reference to them might well be necessary in tracing title to real property. For present-day rules of intestate succession see **SUCCESSION, INTESTATE**.

Distribution of Animals and Plants, see **GEOGRAPHICAL DISTRIBUTION**.

Distribution of Terms. In formal logic, by 'distribution' of a term is simply meant 'taking it universally,' or referring to all parts of it. In the 'opposition of propositions,' the universal negative *distributes* its predicate, whereas the universal affirmative and particular affirmative do not. These distinctions are important, because the validity of any argument or syllogism will usually depend on the sufficient distribution of the terms occurring in it. In 'conversion of propositions,' i.e. in the transposition of subject and predicate, no term must be distributed in the converse unless it was distributed in the convertend, e.g. the converse of 'all metals are elements' is not 'all elements are metals,' but 'some elements are metals'; but that of 'no metals are compounds' is 'no compounds are metals,' because, in this latter example, all the terms are distributed.

District Heating, see **HEATING**.

Ditchling Beacon, point on the S. Downs, 6 m. N. of Brighton, in Sussex, England. It is 813 ft high and crowned by anet earthworks. It was purchased by the Brighton Bor. Council in 1918. Nearby is Ditchling village.

Dithmarschen, or **Ditmarsh** (anet **Nordalbingia**), dist. of Germany in the *Land* of Schleswig-Holstein (q.v.). It is low-lying, partly marshy, and is situated on the W. coast between the estuary of the Elbe and the Eider. Once an autonomous peasant state, it was annexed by the Duchy of Holstein in 1559, incorporated with the Dan. Crown in 1773, and ceded to Prussia in 1866. It retained its own administrative system until 1867. The largest tn in the D. dist. to-day is Heide (q.v.).

Dithyramb (Gk *dithurambos*, god's three-step measure), a song in honour of Dionysus, having as its subject first the

life and death of that god, but afterwards a variety of topics. The D. seems to have originated in Phrygia, or at least among Thracio-Phrygian peoples, and to have entered Greece with the cult of Dionysus. It is first mentioned, by Archilochus (q.v.), as a riotous revel-song at Paros in the 7th cent. BC, and was originally accompanied by the flute (with or without dancing) to music in the Phrygian mood. As a literary composition, the D. was created by Arion (625–585 BC) at Corinth, and though at first cultivated specially in Dorian ter., it attained its full literary development in connection with the Dionysiac festival at Athens. Here it was danced or sung by a chorus of 50 men or boys grouped in a circle, perhaps about an altar. See A. W. Pickard-Cambridge, *Dithyramb, Tragedy, and Comedy*, 1927. See **DIONYSUS**.

Ditmarsh, see **DITHMARSCHEN**.

Dittany, name given to various aromatic plants, after the Cretan mt on which flourishes the D. of Crete, *Origanum dictamnus*; D. of Amoross is *O. tournefortii*. *Cunila mariana* is D. of U.S.A., and *Dictamnus albus* is the bastard common D., also known as Burning Bush or Fraxinella.

Dittersdorf, Carl Ditters von (1739–99), Austrian composer and violinist, b. Vienna, studied under Ziegler and Bonno, and soon became one of the leading violinists of his time. He worked mainly in the employ of private patrons and wrote a score of operettas, mostly humorous, the best known of which are *Doctor und Apotheker*, 1786; *Liebe im Narrenhaus*, 1787; and *Hieronymus Knicker*, 1789; and the oratorios *Isaak*, 1767, and *Esther*, 1773. A number of his instrumental works have been repub. His *Selbstbiographie*, dictated to his son before his death, was pub. in 1801. See C. Krebs, *Dittersdorfiana*, 1900; J. Riedinger, *Karl von Ditter als Opernkomponist*, 1914.

Ditton, Humphrey (1675–1715), mathematician, b. Salisbury, England. He studied theology, and owed his election as mathematical master at Christ's Hospital to the influence of Sir Isaac Newton. Wm Whiston and he invented a method for discovering long., which was approved by Sir Isaac Newton. He wrote *Of the Tangents of Curves*; *A Treatise on Spherical Catoptrics*, which appeared in Phil. Trans.; *An Institution of Fluxions*; *Treatise on Perspective*, etc.

Ditzen, Rudolf, see **FALLADA, HANS**.

Diu, Portuguese is. at Gujerat, India. It is 7 m. long, and resembles part of the coast to which it runs parallel. The Portuguese have been in possession since 1535. Though once of some standing as a port, D. is now of little importance. The Indian Gov. is pressing for its rendition.

Diuretics, medicinal agents which stimulate an increased flow of urine. This is often desirable when from any cause the supply of urine is diminished, or when it is required to promote increased excretion to carry off morbid products circulating in the blood, or, as in dropsy, to aid in the

removal of watery collections. Ordinary water, taken in large quantities, is an effective D. Digitalis and squill act by stimulating the heart's actions and causing an increased blood pressure. Caffeine acts both as a cardiac stimulant and as a renal stimulant, and is a particularly effective diuretic. The mercurial D. (mersalyl, etc.) are the most effective and most commonly used D. in modern practice. Their effectiveness is increased by the oral administration of acid-producing D., such as ammonium chloride, at the same time. In addition to increasing water secretion, mercurial D. also increase secretion of sodium, hence the capacity of the body to retain fluids is reduced. The chief use of mersalyl is in dropsy due to heart failure. It cannot be used in acute nephritis.

Divan (Persian *derin*), word common to many Oriental languages, meaning muster-roll, counting-house, register of payments (cf. Fr. *douane*, custom-house), council, court of justice, sofa. In the sense of a 'collection of poems' Goethe used it in his 'West-östlicher Divan,' and the Persians use it to mean a collection of poems in the alphabetical order of the first letter of the various end rhymes. The Turkish D. was the great council or supreme judicial tribunal of the empire ('*Divani humayun*') at Constantinople. The word dates from the caliphate of Omar (AD 634-44). In the sense of low, cushioned seats or sofas, ranged against the walls as in E. reception-rooms, it became known in Europe in the 18th cent. D.s were especially fashionable about 1820-50. The D., being without side, head, or tail boards, is now widely used as a couch or bed.

Divanieh, see DIVANIYAH.

Diver, see DIVING.

Divergence (mathematical), see SERIES.

Divers, or *Colymbidae*, the name of a family of water-birds which forms the

eggs which hatch into down-covered chicks. The Brit. species are the inconspicuous *C. stellatus*, or red-throated D.; *C. immer*, the great N. D.; *C. adami*, the white-billed N. D.; and *C. arcticus*, the black-throated D. The birds inhabit the temperate regions of both hemispheres.

Dives, Lat. for 'the rich man,' now used as a proper name for the character in Christ's parable of the rich man and Lazarus (Luke xvi).

Dives-sur-Mer, Fr. port in the dept of Calvados, at the mouth of the R. Dives, on the Eng. Channel, 15 m. N.E. of Caen and 8 m. S.W. of Deauville. The Norman fleet assembled off the tn in Aug. 1066, in preparation for the invasion of England. It is a holiday resort, and there are metal industries. Pop. 4900.

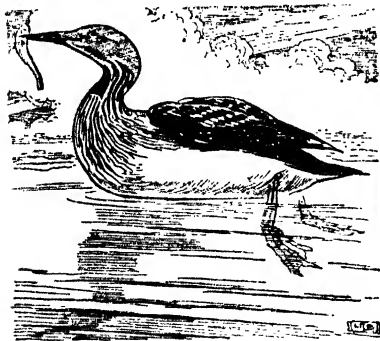
Divide (geography), see WATERSHED.

Dividend (Lat. *dividendus*), literally a sum or quantity to be divided, especially applied in commerce to the ann. or half-yearly interest payable on public funds or the National Debt, and on some other loans and debentures. The profits of joint-stock companies, paid periodically to each stockholder or shareholder, are also called 'dividends.' They are usually fixed at a certain rate per cent. A 'cumulative dividend' is one which, if not paid in full, is made up at the following payment. D. is also the term applied to the sum of money apportioned to creditors from the realised assets of a bankrupt's estate. It may mean either the whole sum divided or the proportion or share falling to each creditor. These D.s are commonly reckoned at so much per pound of the claims (as 8s. in the £1).

Dividing Range, see AUSTRALIA.

Divi-divi, or *Caesalpinia coriaria*, species of Leguminosae which occurs in S. America and the W. Indies. The pods are of economic importance, being used in tanning.

Divination (Lat. *divinatio*), the art of obtaining the knowledge of future things by some supernatural means, or by some system outside the ordinary bounds of reason. D. was generally regarded in the classical world as the revelation of the gods. Roughly, methods of D. may be divided into 2 classes, those in which some particular objects are made use of, as in the case of astrology (q.v.), and those in which the divine will is revealed directly to the human spirit, as in the case of dreams. Perhaps astrology should rank first among these methods. It claims to tell, by the relations of the stars, the futures of states and individuals. It reached its highest stage about the 17th cent. The system of D. by dreams (*oneiromancy*) is extremely ancient, and has been practised in all parts of the world. The dreams may be interpreted either literally or by contraries. The casting of lots (*sortilege*) was common in ancient times. A somewhat similar method is that of *bibliomancy*, by which a book is opened at hazard and some 1 or 2 lines selected at random. These lines are supposed capable of interpretation so as to give advice for the future. Of this kind were the *sortes virgilianae*. In the



DIVER

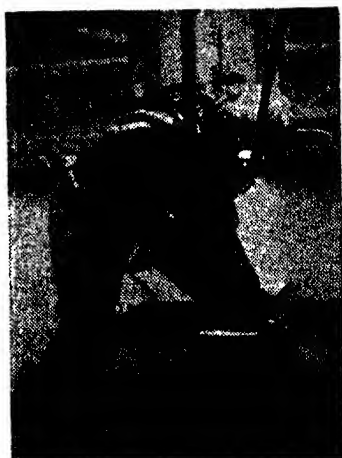
order Colymbiformes. The species are all marine, with short tail-feathers and webbed feet. During the breeding period they live inland and the female lays 2

case of *haruspitation*, or the examination of entrails, the proceedings are far more elaborate, as the institution of the Rom. College of Augurs shows. The time and all the incidental circumstances must be propitious before a good result can be obtained. In the case of D. by *augury* and *omens* this is not so necessary. *Pyromancy* is a method of D. from the behaviour of fire. Somewhat similar is D. by examination of tea leaves. *Crystallomancy* makes use of concentration of the mind induced by crystal gazing. *Cheiro-mancy* or *palmistry* pretends to tell the future of an individual by the lines of his hand. D. in our culture to-day can hardly be considered of great importance, but it is used to a great extent by many primitive peoples. See, e.g., S. F. Nadel, *Nupe Religion*, 1954, for a detailed description of a Nigerian system of D.

Divine Right, the belief that kings are the direct representatives of the Deity, and as such are to receive the obedience due to God's viceroy on earth. They owe obedience to Him alone, and are relieved from all responsibilities towards their subjects. James I of England insisted on D. R. as a principle, which was carried to extremes by the supporters of his son. Charles I's claim to D. R. was the direct cause of the royalist and parl. struggles of the 17th cent. The idea did not lose its hold until after the suppression of the rebellion of 1745 in England, and till the great 1789 Revolution in France. The doctrine was supported by Sir Robert Filmer in England and in a modified degree by Bossuet in France. It was opposed by John Locke in his *Two Treatises of Government*, 1690; and by J. J. Rousseau, *Contrat Social*, 1762.

Diving. In Indian seas the art of D. has been practised from very early times. Before the introduction of mechanical aids, D. was the only means of obtaining the pearls, sponges, and corals in such oceans. When all allowances are made, however, slightly over 3 min. is the limit of time during which a naked diver can remain under water. Persons who habitually engage in D. suffer severely from the constant strain on the lungs. The attention of inventors was very early turned to the discovery of some means by which the diver could remain longer under water. The earliest invention was the D. bell, of which the principle is very simple. If an inverted jar be sunk in a vessel of water, the air contained in the jar excludes the water from the interior. Since air is compressible the water gradually rises in the jar as this is immersed; so that at a depth of 33 ft the air would be compressed into half its original bulk. The D. bells of the first makers were strong, heavy vessels, generally formed of wood girded with iron hoops. The great drawback to these early forms of D. bell was that they had to be raised to the surface at frequent intervals for fresh supplies of air. It was not until 1778 that Smeaton devised a type of bell which contained all the elements of the present appliances. In replacing the shoeing of Hexham Bridge, Smeaton contrived a bell to

which he attached a force-pump. The modern D. bell is usually of a rectangular shape, and weighs about 5 tons. The air-supply pipe, connected with a force-pump, is screwed on to the top, which is supplied with windows of thick glass; the bell is fitted with seats inside, and is worked in water up to a depth of 35 ft. The invention of the D. dress was very gradual, and many persons contributed something to it, but Siebe did more than any other to improve it. In 1829 he invented the 'open' D. dress, which consisted of a helmet and waterproof jacket. The air pumped in at the helmet was allowed to escape below the jacket. The great



A DIVER AT WORK IN A PRACTICE TANK

drawback to this dress was that it obliged the diver to remain in an upright or gently stooping posture. Siebe accordingly invented the close dress in 1857, and this type is now in general use. It consists of a waterproof costume of strong twill and india-rubber, covering the whole body except the head and hands. The helmet is made of tinned copper, and fitted with 3 strong plate-glass windows in front. The middle eyepiece is made so that it can be unscrewed. The air is supplied from a pump by means of a vulcanised india-rubber pipe which is attached to an inlet valve in the back of the helmet; the outlet valve is also fixed to the back. The escape valve is in some patterns regulated by the diver, but more commonly if an adjustable valve is desired a self-righting pattern is used. A life line is attached to the diver's waist for signalling purposes. The boots of a diver are heavily weighted, with leaden soles, and weigh about 20 lb. each; additional weights are attached to the shoulders when required. The First World War gave a strong impetus to D., as many of the ships that were sunk by submarines

contained gold and other valuables estimated in some cases to be worth millions of pounds. Where these vessels lay upon a sea-bed that was not in very deep water and in places easily located the divers were remarkably successful, sometimes recovering practically the whole of the lost treasure. The difficulties of the work were such that dependence on air from above was not desirable, and an apparatus was used that enabled the diver to purify the air by carrying oxygen, stored in bottles, which made him independent of outer supplies. Up to this time the lowest depth at which a diver was able to work was about 200 ft, and even from this



Fox Photos

THE DEEP SEA DIVING OUTFIT

depth it was necessary to ascend by slow and tedious stages if he would avoid ill effects; but recently Neufeldt and Fuhko of Kiel, Germany, invented a diving dress capable of standing the pressure of 25 atmospheres, in which divers have already worked at as great a depth as 515 ft, and for which it is claimed that their tasks can be carried on at as low a depth as 750 ft. This dress consists of an envelope of steel and aluminium.

Diving Bell, see DIVING.

Diving Rod (known also as *Virgula Divina*, *Baculus Divinatorius*, *Caduceus*, or *Mercury's Wand*, *Aaron's Rod*, etc.), a forked branch usually of hazel, willow, or rowan, or sometimes artificially made, or a Y-shaped metallic rod (iron, brass, or copper), by means of which water or minerals may be discovered beneath the earth's surface by certain persons apparently possessed of the requisite powers. The rod is grasped by its 2 prongs and, held thus in front of the holder, twists or quivers suddenly when the exact spot is reached, thrusting down towards the con-

cealed mine or spring. This belief is very old; *Agricola*, *Sperlingius*, and *Kirchmayer* all believed in the occult powers of the magic wand, but the modern use of the diving rod by 'dowsers' should not be confused with the aetad wand. Another use was to discover the authors of a crime, as used by *Jacques Aymer* in the case of murder and robbery at Lyons, 1692. The D. R. of hazel or willow was used by prospectors for metals in the Hartz Mts of Germany in the 15th cent., and the custom was adopted in the next cent. in Cornwall, where it persisted until recent times. Some diviners use a polished stone held at the end of a string like a pendulum instead of a D. R. The stone revolves quickly or slowly, clockwise or anti-clockwise, thus, it is claimed, transmitting its message to the holder. See A. Lang, *Custom and Myth*, 1884; J. Mullins, *The Diving Rod*, 1894; B. Tompkins, *Springs of Water*, 1925; T. Besterman, *Water Diving*, 1938; H. de France, *The Elements of Dowsing*, 1948.

Division, the largest formation in the army which is permanent in composition. It can be either armoured, infantry, or airborne. Commanded by a major-general, it usually consists of 3 brigades (q.v.), each of 3 battalions (q.v.). In war a D. forms part of a corps (see *BRITISH ARMY, Organisation*). An infantry D. has approximately 18,000 all ranks, while the other types are approximately 16,000 strong.

Division of Labour: 1. In economics, a phrase used by Adam Smith, and since become current, to denote the separation of the labour necessary to produce a commodity or service into distinct processes, and the assignment of each of the processes to a different worker or body of workers. D. of L. may be said historically to have begun with the specialisation of industry, or the earliest separation of different trades and employments from one another. The modern application of the term to the specialisation of processes, as distinct from specialisation of industries, is no more than an extension of the same principle. The effect of D. of L. is a more than proportional increase in production, ascribed by Adam Smith to 3 causes: (1) the increase of dexterity in every particular workman; (2) the saving of time lost by passing from one kind of work to another; and (3) the invention of many labour-saving devices or machinery by workmen becoming familiarised with their own operations; to which have been added (4) remuneration of different agents at different rates in lieu of paying for the easy and difficult labour at an equal rate, a result which would follow from all the work being done by one man; (5) the greater scope for innate aptitudes; (6) the use of specialists in work that might not be possible without D. of L.: research, risk-bearing, organisation, etc. But there are many disadvantages: (1) deadening of the faculties from their constant concentration on a single operation, involving as a corollary the inadaptability of the average workman to

any other form of work; (2) the impairment of the physique of workmen, due partly to the monotony of the work, and partly to the herding together of great numbers of operatives in large industrial centres; (3) unemployment. If D. of L. is to increase productivity and maintain high living standards, workers must be willing to exchange their products; D. of L. therefore requires laws and institutions, such as banks and courts of justice to enforce contracts, etc., to facilitate trade and exchange. If the E. countries wish to achieve the high standards of living of the W., they must embark on greater specialisation and D. of L. See also **MASS PRODUCTION**.

2. In biology, the physiological D. of L. in the organs of the same individual body, with an accompanying diversification of structure. In the protozoa, or most primitive animals, there is no D. of L., the individual being composed of one vital unit, which consequently performs all the various functions of motion, nutrition, propagation, etc. In the second cardinal division of the animal kingdom, the metazoa or multicellular animals, the lowest forms contain at least 2 sets of cells, each adapted to the performance of distinct functions, and consequently there is at least a binary D. of L. Higher in the scale the subdivision becomes even greater, until all the essential functions are performed by different organs.

Divona, see **CAHORS**.

Divonne-les-Bains, see **GEX**.

Divorce, dissolution of marriage by legal process. By Eng. law, prior to the Matrimonial Causes Act, 1857, the actual dissolution of the marriage tie, a *D. a vinculo matrimonii*, could only be obtained by Act of Parliament, and the courts could only grant a decree of judicial separation, a *mensa et thoro*, i.e. from board and bed, such as had formerly been granted by the eccles. courts. Decrees of nullity, however, could be granted. The div. of the Supreme Court of Justice known as the Probate, Admiralty, and Divorce Div. has jurisdiction in all matrimonial matters, and can grant decrees in suits for D., judicial separation, nullity, and restitution of conjugal rights.

Grounds of Petition. A petition may be presented either by the husband or the wife for (a) adultery; (b) desertion without cause for at least 3 years; (c) cruelty; (d) incurable unsoundness of mind of respondent—but respondent must have been continuously under treatment and care for at least 5 years immediately preceding the petition. A wife may petition on the ground that her husband has, since marriage, been guilty of rape, sodomy, or bestiality (save for these grounds husband and wife are on equal terms in applying for D.). A petitioner who also has committed adultery must seek the court's discretion, otherwise the petition will fail. In relation to the court's discretion in such cases the decision in *Blunt v. Blunt*, 1943, is important. It was there decided that the chief considerations to be taken into account as warranting the exercise of the

discretion in favour of a petitioner are: (i) the position and interest of any children of the marriage; (ii) the interest of any party with whom the petitioner has been guilty of misconduct, with special regard to the prospect of their future marriage; (iii) the question of reconciliation if the marriage is not dissolved; (iv) the interest of the petitioner, and in particular that the petitioner should be able to re-marry and live respectably; and (v) the interest of the community at large, to be judged by maintaining a true balance between respect for the binding sanctity of marriage and the social considerations which make it contrary to public policy to insist on the maintenance of a union which has utterly broken down. Petitioner may also sue the co-respondent for damages. There is no exact legal definition of 'desertion'; but it implies leaving of the spouse without consent (*Hard v. Ward*, 1858). Refusal to obey an order for restitution of conjugal rights is constructive desertion. 'Cruelty' includes danger to life or limb, or to health, bodily or mental. Prior to the Matrimonial Causes Act, 1937, the court was bound to satisfy itself that the petitioner had not 'connived at or condoned' the adultery, but under the above Act petitioner must satisfy the court that 'there has been no collusion, connivance, or consent'. The Act does not, however, state how the court should exercise its duty of inquiry, though it would seem that if the court is not satisfied it should, before dismissing the petition, either ask for witnesses to be called who might be able to assist, or call on the Queen's Proctor. But even if the respondent were called, he (or she) could not be compelled to answer any question tending to show that he (or she) had committed adultery, though he (or she) might choose to admit it or give evidence in denial. There is no narrow definition of 'collusion', but it exists where the originating of the petition is founded on an agreement between the parties or their agents.

A petition for *judicial separation* may be presented on any grounds on which a petition for D. might have been presented or on the ground of failure to comply with a decree for restitution of conjugal rights or on any ground on which a decree *a mensa et thoro* might have been pronounced. Where the court grants the decree it is not, since the Act of 1937, obligatory for petitioner to cohabit with respondent. The grant of the decree does not bar presentation of a petition for D. upon substantially the same facts.

Nullity. A marriage is void *ab initio* where the parties cannot or have not contracted a valid marriage—e.g. a bigamous marriage, a marriage induced by fraud, or a marriage within the prohibited degrees of affinity. Prior to the Act of 1937, non-consummation for physical or mental defect was the sole ground on which a regular marriage was voidable. New grounds of nullity since the Act of 1937 are: (i) non-consummation owing to wilful refusal of respondent; (ii) that either party, at marriage, was of unsound mind or a mental defective; (iii)

that respondent has suffered venereal disease in a communicable form; (iv) that respondent was at the time of marriage pregnant by some person other than the petitioner. Generally speaking, however, grounds ii, iii, and iv will not nullify the marriage unless the petitioner were ignorant of the facts at the time the marriage took place, and in any case proceedings must be begun within a year; nor will the court grant a decree unless it is satisfied that marital intercourse with the consent of the petitioner has not taken place since the discovery by petitioner of the existence of the grounds for a decree.

Parties may legally marry again after a decree of D. is made absolute; i.e. 3 months

(Licensing Act, 1902) habitual drunkenness. In Scotland, adultery or desertion for 4 years is a ground for divorce for either party, and a party may not marry the person with whom adultery has been committed.

In 1926 an Act was passed to make unlawful the pub. in newspapers of unwholesome details of divorce cases; and under that Act only the following details may be reported: names, addresses, and occupations of parties and witnesses; concise statements of charges; points of law; and the judge's summing up. The effect of the Act has been to stifle reports for the most part, especially as points of law are of no interest to the great majority

	1938	1946	1950	1955
England and Wales— <i>Dissolution:</i>				
Decree absolute granted	6092	29,100	30,331	26,262
<i>Nullity:</i>				
Decree absolute granted	158	729	539	554
Scotland— <i>Divorce</i> granted	812	2878	2185	2054
Northern Ireland (petitions)— <i>Nullity</i>	1	1	10	2
<i>Divorce</i>	—	217	154	116

*The Ann. Abstract of Statistics gives no figure, since decrees of D. granted by the High Court of Justice before 1 Oct. 1939 (operation of the Matrimonial Causes Act (Northern Ireland) 1939) did not dissolve the marriage.

(formerly 6 weeks) after the decree *nisi* has been pronounced, if the Queen's Proctor has not successfully intervened on the ground of collusion, etc. The reasons why the period of 3 months was selected were twofold: (i) it is sufficiently long for the Queen's Proctor to exercise his function, but not so long as to be an undue burden on the innocent petitioner; (ii) it is the time limited for appeal to the Court of Appeal, so that it can apply in all cases defended or undefended where the time limit for appeal has expired without an appeal having been lodged. The parties may not, however, marry if a decree for judicial separation only is granted. No petition for D. may be presented during the first 3 years after marriage unless the judge allows it on the grounds of 'exceptional hardship' suffered by petitioner or 'exceptional depravity' of respondent. These 2 grounds are entirely within the court's discretion, and, in determining an application, the court must have regard to the interests of the children.

Separation orders may be made (Summary Jurisdiction Act, 1895) by courts of summary jurisdiction after conviction of the husband for aggravated assault, for desertion, persistent cruelty, neglect of maintenance, resulting in living apart, or

of newspapers. The simplification of D. procedure in recent years has in these inflationary times kept down the cost and expedited the hearing of undefended cases. The Legal Aid and Advice Act, 1949, has provided financial assistance for many petitioners who would otherwise have been unable to file petitions. The rules of court have made it possible for defended and undefended cases to be tried in certain prov. ins.

Alimony. While a D. suit is in progress, the husband is liable to provide his wife with alimony or maintenance. The amount is usually one-fifth of his income. After a D. has been pronounced, the court fixes permanent alimony. This is often at such an amount as will make up the wife's income to one-third of the joint incomes, but the court has a wide discretion in this matter. Under section 23 of the Matrimonial Causes Act, 1950, a wife may apply to the D. court for maintenance only, without petitioning for D.

So far as statistics are concerned, it is evident that the rate of D. has increased considerably in recent years. In 1880-2 the number of D.s and annulments of marriages in England, Wales, and Scotland was 366. In 1929 it had risen to

4018, being an increase of 800 on the previous year and the highest figure then on record. In 1937 the total was 5535 and the number has tended to increase steadily since then.

The comparative table gives recent figures. A large number of D.s involve childless unions, and an analysis of the figures suggests the stabilising influence of offspring. Statistics show that many divorced persons soon form other unions and that these re-marriages of the divorced occur largely in the early twenties. Consult *William Lacey, on Divorce*, 1955; and *Rayden, on Divorce*, 1953 (supp. 1955).

Divorce in the U.S.A. In the U.S.A. there is no federal law of D., nor any jurisdiction of the Federal Courts; the different states have their separate laws, and there are 48 different jurisdictions. S. Carolina provides no means of obtaining a legal D.; adultery, cruelty, or desertion are the grounds in practically all states. In 39 states imprisonment is a ground, in 38 drunkenness, in 22 neglect of maintenance. In some of the states other causes for D. are insanity, venereal disease, addiction to drugs, and impotence. Restrictions on D. are greater in the E. states and lesser in the W. states. The rate is lowest in the S. states of Louisiana, New Mexico, and Arizona, where Rom. Catholic influence is strong. Some of the states grant D. for comparatively trifling reasons, e.g. incompatibility. The prevalent opinion in Great Britain on the subject of D. in the U.S.A. is that the rate of D. to marriage is so high that Amer. family life is in serious jeopardy. This opinion, largely based on the wide circulation given by the Press to all cases concerning Amer. film 'stars,' is no doubt exaggerated; but as compared with the rate in Great Britain the Amer. rate is certainly high: assuming approximately 383,700 marriages (1954) in Great Britain (excluding N. Ireland) and 30,227 D.s, the rate per 1000 marriages is about 78; assuming 1,490,000 marriages in the U.S.A. in 1954, and 379,000 D.s, the rate per 1000 marriages is about 254. On the other hand, the rate varies considerably in the different states. In Nevada only 3 months' residence is required, and people of means go there to secure their decrees. Amer. statisticians are at pains to point out that marriages have greatly increased in the U.S.A., and that the D. rate should be based not on the total population but on persons of marriageable age, which, however, varies with individual opinion.

Diwan, see **DIVAN**.

Diwaniyah, prov. and tn of same name in central Iraq (q.v.). Pop. (prov.) 383,000; (tn) 20,000.

Dixie, Lady Florence (1857-1905), author and explorer, the daughter of the Marquis of Queensberry; b. London. In 1878-9 she explored the wastes of Patagonia, and acted as war correspondent of the *Morning Post* in the Boer war of 1880-1. It was mainly through her efforts that Cetewayo was released and sent back to Zululand. She was an

ardent advocate of women's rights. In 1875 she married Sir Beaumont D. Among her writings are: *Across Patagonia*, 1880; *In the Land of Misfortune*, 1882; and *Aniwee: the Warrior Queen*, 1890; and numerous poems.

Dixie, name popularly applied to the S. states of the U.S.A. There are various explanations of the origin of the word. The S. states were those S. of the Mason and Dixon line, and D. is supposed to be a corruption of Dixon. Another story has it that it came from the paper money printed in Louisiana before the Civil war. Owing to the number of people of Fr. extraction living in the state, the paper money had one side inscribed in Fr. 'Tendollar bills therefore had the Fr. word for ten, which is 'dix.' In popular nomenclature the bills became known as 'Dixies.' And Daniel Emmett gave D. immortal currency in his famous song 'Away down South,' which to this day is a favourite tune in the S. states.

Dixie Highway, Amer. road extending from Lakes Michigan and Huron to Florida, with a branch through Nashville, Tennessee. It is 1930 m. long in its W. and 2169 in its E. div. Dixie Overland Highway runs from Savannah, Georgia, to San Diego, California, is 2660 m. in length, and passes through Columbus, Meridian, Vicksburg, Dallas, El Paso, and Phoenix.

Dixmude (Dixmuide), Belgian tn in the prov. of W. Flanders, 15 m. S. of Ostend. Has a trade in linen, chicory, butter, and cattle. Pop. 3700. During the First World War it was in the battle line almost throughout the operations on the W. Front. Situated on the R. Yser, about midway between Ostend on the N. and Ypres on the S., its position exposed it to much bombardment and the tn was almost destroyed. A Franco-Belgian force maintained hold on the tn in 1914, after which the appropriate sluices were opened and a large flooded area kept the opponents apart. The Belgians entered the tn again in Sept. 1918.

Dixon, Henry Hall (1822-70), sporting writer, b. Cumberland. He was educ. at Rugby and Trinity College, Cambridge. Using the pen-name 'The Druid,' he began to write regularly for the *Sporting Magazine*, and pub. 3 novels in it, *The Post and the Paddock*, 1856, *Silk and Scarlet*, 1858, and *Scott and Sebright*, 1862. Other writings were: *Field and Fern*, an account of the herds and flocks of Scotland, 1865; *Saddle and Sirloln*, of those of England, 1870; and *The Law of the Farm*, a legal treatise, 1858. See F. Lawley, *Life and Times of 'The Druid.'* 1895.

Dixon, Richard Watson (1833-1900), clergyman and poet, b. London, son of a Wesleyan minister. He was educ. at King Edward's School, Birmingham, and Oxford, where he associated with members of the Pre-Raphaelite Group. Taking orders, he was vicar successively of Hayton in Cumberland and Warkworth in Northumberland. His vols. of verse include *Christ's Company*, 1861, and *Historical Odes*, 1863, but his greatest work was his *History of the Church of*

England from the Abolition of the Roman Jurisdiction, 1900. See life by his son.

Dixon, William Hepworth (1821-79), writer and traveller, b. Manchester. He began his life as a clerk in his native city. His series of papers in the *Daily News* on 'The Literature of the Lower Orders,' and 'London Prisons,' attracted attention. In 1849 he pub. *John Howard and the Prison-World of Europe*, which attained great popularity. In 1851 appeared *William Penn*, in which he refuted the charges brought by Macaulay against the eminent Quaker. A visit to the U.S.A. in 1866 was followed by *New America*, 1867, and *Spiritual Fires*, 1868.

Dixon Entrance, strait on the W. coast of N. America, situated between Queen Charlotte Is. (Brit. Columbia) and Prince of Wales Is. (Alaska). It is c. 50 m. long, and c. 50 m. wide.

Diyarbakir, cap. of the il D., Asiatic Turkey, on a high mass of basalt rock on the r. b. of the Tigris. Gold and silver filigree is made, and wool, mohair, and copper ore are exported. D. is still surrounded by black basalt walls with 4 gates. It was fortified by Constantine in the 4th cent., fell to Saladin in 1183, was conquered by Timür in 1391, and by Sultan Selim I in 1515. Three other ils were formed out of the il of D. in 1923, **Arghana**, **Mardin**, and **Severek**, leaving that of D. with a pop. of 345,257. The tn has a pop. of 63,180.

Dizful, see **DEZFUL**.

Djezzar, Ahmed (c. 1735-1804), surnamed 'the Butcher' because of his cruelty, b. Bosnia and sold as a slave to Ali Bey in Egypt. He rose to be governor of Beirut, and finally Pasha of Acre and Damascus, in which position, with the help of Sir Sidney Smith, he successfully defended Acre for a month (1799) against Napoleon.

Djibuti, or Jibuti, Fr. tn and port on the Gulf of Aden, S. of Tadjura Bay, in E. Africa, cap. of Fr. Somaliland and terminus of the railway via Diredda to Addis-Ababa in Ethiopia, of which it is the main outlet on the Indian ocean. Following the Fr.-It. armistice in 1940 a Fr.-It. commission came to D. on 2 Sept. 1940, to arrange terms between Italy and Vichy France, by which Italy secured full rights in the port of D. and along the Fr. section of the railway. The Fr. surrender of D. isolated Brit. Somaliland and thereby facilitated its capture by the Italians. Early in 1941, however, Brit. forces advanced on the railway and by summer of that year D. was under close blockade. On 28 Dec. 1942 Fr. Somaliland joined the Allies. The Ethiopian Gov. now has considerable financial interest in the railway. D. may lose much of its influence with the estab. of the port of Asab to the N. in Ethiopia.

Djidjelli, tn of Algeria in the dept of Constantine. Exports cork, wine, and sardines. Pop. 11,400.

Djinn, see **JINN** and **DEMONOLOGY**.

Dmitrieff (Dimitriev), Radko- (1859-1919), Bulgarian gen. who served with the Russian Army during the First World War. He commanded the army which

unsuccessfully besieged Przemysl during Sept.-Oct. 1914; his losses were very severe—70,000 casualties. At the Battle of Cracow (Nov. 1914) he showed great skill as a leader, and succeeded in driving back an Austro-Hungarian army. In the Battle of Dunajewo-San (q.v.) in the spring of 1915 he commanded the Third Army, and suffered another heavy reverse at Gorlice-Tarnow, where an Austro-German force made a very wide break in his line and captured over 50,000 prisoners. He tried to hold up the enemy at the Lupkow Pass, but failed, and as a consequence Brusilov's (q.v.) army was also compelled to withdraw. After the Russian revolution he was murdered by the Communists at Piatigorsk.

Dmitrievsk, or Dmitriyevsk, see **MAKE-YEVKA**.

Dmitriy Donskoy (1350-89), Grand Prince of Moscow from 1363. He is famous for his victory over the Tatars on the Don (hence his nickname) in 1380, the first Russian victory over Tatars since they conquered Russia. D. introduced firearms into the Russian Army.

Dneprodzerzhinsk (Ukrainian **Dniprodzerzhyn's'ke**, until 1936 **Kamenskoye**), tn in the Dnepropetrovsk oblast of the Ukraine, riv. port on the Dnieper W. of Dnepropetrovsk. It is a major industrial centre producing iron and steel (since the 1880's), chemicals, railway cars, and cement. It was founded as a vil. in the 18th cent., and became a tn in 1917. Pop. (1956) 163,000 (1926, 34,000, 1939, 148,000), Ukrainians and Russians.

Dneproges (Russian abbreviation of Dnieper Hydroelectric Station), the first of the big hydroelectric stations built in the U.S.S.R. Situated near Zaporozh'ye, capacity 558,000 kw. Research and design work on this project were started in 1905, the building in 1927. Sev. foreign firms acted as consultants, equipment being largely supplied by the General Electric Co. The completion of the station (1932) was hailed as one of the first successes of Socialist construction.

Dnepropetrovsk (Ukrainian **Dnipropeetrov's'ke**): 1. Oblast in SE. Ukraine, consisting largely of ravined but fertile lowland steppe traversed by the Dnieper. It has rich deposits of high-quality iron ore and of manganese. There are large metallurgical, chemical, engineering, and food industries, wheat and sunflower growing, and milk gardening. The princ. tns are D., Krivoy Rog, Dneprodzerzhinsk, Nikopol'. The first non-nomadic pop. was the Ukrainian Cossacks on the Dnieper from the 16th cent., but mass colonisation took place in the 18th cent. (see **NEW RUSSIA**). Area 12,600 sq. m.; pop. under 2,500,000, mostly Ukrainians and Russians (before the Second World War also Jews, Germans).

2. (until 1926 **Yekaterinoslav**) Cap., an economic and cultural centre of the above, on the Dnieper. It is one of the major industrial cities of the U.S.S.R., with large metallurgical, chemical, and engineering, as well as light and food, industries. It is also an important transportation centre (riv. port, 1 railway

lines, airport). There is a univ. (founded as univ. courses for women in 1916, transformed 1918) and a mining institute (founded 1899). Founded by Potemkin in 1778 sev. m. NE. of its present site, it was transferred in 1783 and made prov. cap.; until the 1870's it developed slowly as a commercial centre of a rich agric. area. After the construction in 1884 of the railway Donets Basin-Krivoy Rog, D. rapidly developed as a centre of the iron and steel industry (first plants built 1885-9); engineering and chemical industries have been developed since the 1930's. The city and its industries suffered greatly during the Second World War and Ger. occupation 1941-3. Pop. (1956) 576,000 (5th in the Ukraine and 15th in the U.S.S.R.; 1897, 113,000; 1917, 217,000; 1923, 129,000; 1926, 224,000; 1939, 501,000).

Dnestr, see DNIESTER.

Dnieper (Ukrainian **Dnipro**, Russian **Dnepr**, anct **Borysthenes**), third largest European riv. (after Volga and Danube), rising in the Valdai upland W. of Moscow and flowing W. to Orsha, S. to Kiev, S.E. to Dnepropetrovsk, S. to Zaporozh'ye, and SW. into the D. liman (estuary) of the Black Sea, E. of Odessa. Length 1430 m., drainage area 200,000 sq. m. The main tribs. are the Berezhina and Pripiet on the right, the Sozh and the Desna on the left. The D. is largely a lowland riv. with a wide valley, quiet flow, and high spring floods. It is ice-bound from Dec. to Mar.-April. The famous rapids between Dnepropetrovsk and Zaporozh'ye have been submerged by the construction of the Dneproges (q.v.). The D. traverses in the N. the forested regions of Smolensk oblast and Belorussia (see POLES'YE), with peat and phosphate deposits, flax and potato cultivation, and dairy farming; in the S. it crosses the Ukrainian wooded steppe and steppe zones with their large iron and manganese ore deposits and diverse agriculture (wheat, sugar beet, cotton). It is navigable for nearly 1300 m. (from Dorogobuzh). The main goods transported are mineral building materials and timber downstream, grain, oil products, and coal upstream. The chief ports are Kiev, Dnepropetrovsk, Zaporozh'ye, Kherson. The large hydro-electric stations of Dneproges and Kakhovka are on the D.; new ones are under construction at Dneprodzerzhinsk and Kremenchug. In the Middle Ages D. formed a part of the famous trade route from Scandinavia to Byzantium and played a great role in the hist. of Kievan Russia (q.v.); in the 16th-18th cents. the banks and is. of the middle and lower D. were colonised by Ukrainian Cossacks (see COSSACKS; SIGM). The intensive development of navigation started in 1823. The Battle for the D. in Aug.-Dec. 1943 was one of the major operations on the E. front during the Second World War. The D. is the celebrated national riv. of the Ukrainians.

Dnepropetrovsk, see DNEPROPETROVSK.
Dniester (Russian **Dnyestr**, anct **Tyras**), navigable riv. in S. Russia, rising in the Carpathians and flowing S.E. into the

Black Sea 30 m. SW. of Odessa. Length 880 m. It separates Bessarabia from Podolia (Ukraine), and in 1918-40 formed the demarcation line between the U.S.S.R. and Rumania.

Dnyestr, see DNIESTER.

Dobb's Ferry, small tn of New York, U.S.A., situated in Westchester co. The reputation of the tn rests chiefly on its historical connection with Washington, Clinton, Rochambeau, and other leaders of the War of Revolution. It is now a residential suburb of New York City, and manufs. chemical and electrical and electronic equipment. Pop. 6268.

Dobell, Sydney Thompson (1824-74), poet and critic, b. Cranbrook, Kent. In 1836 his father, a wine merchant, removed to Cheltenham, with which D. was connected for the rest of his life. The influence of his grandfather, Samuel Thompson, brought him into contact with the 'Free-thinking Christians.' In 1850 under the pseudonym 'Sydney Yendys' he pub. *The Roman*, which met with great success. *Balder* appeared in 1853; *Sonnets on the (Crimean) War*, in which he was assisted by Alexander Smith, in 1855; and *England in Time of War*, which contains his well-known poem 'Keith of Ravelston', in 1856. D. belonged to what has been called 'the spasmodic school' of poets. The undoubted charm of some of his lyrics and the value and originality of some of his thoughts are often marred by excess of metaphor and a general dreariness and nervelessness only relieved by bright 'spasmodic' flashes. See J. Nichol, *Poetical Works of Dobell*, with memoir, 1875, and the collection of his prose works under the title *Thoughts on Art, Philosophy and Religion*, selected from the *Unpublished Papers of Sydney Dobell*, by the same writer, 1876; and Emily Jolly, *Life and Letters of Sydney Dobell*, 1878.

Döbeln, Ger. tn in the dist. of Leipzig, on the Freiburger Mulde, 35 m. ESE. of Leipzig (q.v.). It was sacked by the Russians (q.v.) in 1429. It has iron foundries, and manufs. machinery, machine tools, glass, musical instruments, and leather goods. Pop. 29,000.

Doberan, Ger. tn in the dist. of Rostock, near the Baltic coast, 10 m. W. of Rostock (q.v.). It has a 14th-cent. Gothic church, a former Cistercian abbey with many art treasures, and the tombs of many Mecklenburg princes. The tn is visited as a spa. Pop. 11,000.

Döbereiner, Johann Wolfgang (1780-1849), Ger. chemist, b. Rug, near Hof, Bavaria. In 1810 he was appointed prof. of chem., pharmacy, and technology at Jena, where he made the acquaintance of Goethe. He is chiefly famous for an invention known as 'Döbereiner's Lamp,' in which he demonstrated that spongy platinum in presence of oxygen can ignite hydrogen; a process which has been used in many self-igniting coal-gas burners. He obtained the crystalline compound of alcohol with ammonia, and discovered furfural. His works include treatises on pneumatic chem., 1821-5, and the chem. of fermentation, 1822. He was one of the

first to try to group elements according to their atomic weights, thus helping to prepare the way for Mendeleeff's Periodic System. He also discovered the catalytic effect of manganese dioxide upon the decomposition of potassium chlorate by heat.

Dobree, Peter Paul (1782-1825), classical scholar and critic. At Trinity College, Cambridge, he became an intimate friend of Porson, and in 1823 was appointed regius prof. of Greek. After Porson's death D. was commissioned to edit the pub. of his notes on GK authors, and brought out the *Plutus* of Aristophanes in 1820 and all Porson's *Aristophanica*. In 1822 he pub. the *Lexicon* of Photius, and left an ed. of Demosthenes unfinished at his death.

Dobrich, see **TOLBUKHIN**.

Dobromierz, see **HOTENFUEDEBERG**.

Dobrowsky, Josef (1753-1829), founder of Slavonic philology. b. Dermet, near Raab, in Slavacchia, of Bohemian parents. In 1772 became a Jesuit and in 1786 a secular priest. From 1779 onwards D. ed. magazines on Bohemian literature. Among his works are *Scriptores Rerum Bohemicarum*, 1783-4; *Ausführliches Lehrgebäude der böhmischen Sprache*, 1809; *Entwurf zu einem allgemeinen Etymologicon der slavischen Sprachen*, 1813. With his *Institutiones Linguae Slavicae dialecti veteris*, 1822, and *Cyril und Method der Slaven Apostel*, 1823, he laid the foundations of modern study of Old Church Slavonic.

Dobruja, or **Dobrudja** (Bulgarian **Dobrudzha**, Rumanian **Dobrogea**), dist. of Rumania and Bulgaria. It is a low tract of Quaternary alluvium which stretches for a distance of 140 m. along the Black sea; it is bounded on the N. and W. by the Danube (q.v.). It rises in Sacar Bair to a height of 7765 ft, but the mean elevation of the dist. is only about 500 ft. During the First World War Rumania, after declaring war on Austria-Hungary, 27 Aug. 1916, at once advanced into Transylvania on a front of 350 m. while holding the D. with a comparatively small force. Later the Austrians, who had been taken by surprise, reinforced by Ger. troops, advanced into the D. under the Ger. field-marshal, Mackensen, on 4 Sept., and Turtucaia fell to them on 6 Sept. Ten days later Silistria was also taken and a new Russo-Rumanian defensive line was constructed between Rasova and Tuzia in the D. The Rumanians continued to lose ground in their new sector until the second week in Nov. 1916, when they retook Hirsova. But this success was not consolidated, they were overwhelmed on other fronts, and fighting in the D. generally came to a standstill. It was prematurely agreed among the govts. of the Central Empires and those of their allies that the eventual disposal of the D. should be in the hands of Germany and Bulgaria, the new understanding being that Bulgaria should regain what she asserted had been taken from her by the W. Powers after the last Balkan War; but as the ultimate victory was with the Entente, Rumania retained the ter. In

the Second World War, however, Rumania ceded the S. D. to Bulgaria by the treaty of Craiova, 7 Sept. 1940, Bulgaria gaining thereby an area of about 3000 sq. m., the chief tn. of which is Tolbukhin (q.v.). The D. was overrun by Ger. troops in Mar. 1940 and was occupied, with all Bulgaria, until 1944. The N. part of the D. fell to the Russian armies with the capture of Galati on 27 Aug. 1944. Constanta fell to them on 29 Aug. These captures, however, were from Ger. troops, for Rumania had accepted armistice terms on 23 Aug., and had joined the Allies. The peace treaty of 1947 confirmed the retention of S. D. by Bulgaria. See R. Vulpe, *La Dobroudja à travers les siècles*, 1939; B. Newman, *Balkan Background*, 1944.

Dobson, Frank (1889-), sculptor, b. London, son of Frank D. artist. He studied art from boyhood in a London sculptor's studio and later at Arbroath and the City and Guild School, Kennington. He exhibited at Venice, Dresden, Stockholm, Wembley, Paris, and New York. His best sculptures include many studies of form in single figures, nude or draped, including 'Truth' (Tate Gallery), which have placed him among the leading living sculptors, and a number of portrait busts, e.g. a bronze bust of the Earl of Oxford and Asquith, a brass head of Sir Osbert Sitwell, and his bust of Sir Thomas Lipton. Works by him are in the National Gallery of Brit. Art, Tate Gallery, and Manchester City, Glasgow, and Leeds art galleries. He was elected R.A., 1952, and was prof. at the Royal College of Art from 1946 to 1953. He has also made many pencil and water-colour drawings.

Dobson, Henry Austin (1840-1921), Eng. poet, critic, and biographer, b. Plymouth. Educ. at Beumais Grammar School and the gymnase at Strasbourg, he entered the Board of Trade in 1856, became a first grade clerk in 1874, and prin. clerk in 1884, which last position he retained until his retirement from the service 7 years later. It was, however, as a man of letters rather than as a gov. official that Austin D., as he usually subscribed himself, achieved fame. At an early age he came before the world as a poet; and he issued sev. books of verse: *Vignettes in Rhyme*, 1873; *Proverbs in Porcelain*, 1877; *Old World Idylls*, 1883; and *At the Sign of the Lyre*, 1885. His collected poems were pub. in 1897. One of the greatest authorities on the Georgian period, D. wrote mainly on that era, his prin. works being monographs on Fielding, 1883, Steel, 1886, Goldsmith, 1888, Horace Walpole, 1890, Hogarth, 1891, Richardson, 1902, Fanny Burney, 1903; *Eighteenth Century Vignettes* (3 series, 1892, 1894, 1896); and *At Prior Park and Other Papers*, 1912. His complete poetical works were ed. by A. T. A. Dobson, 1923, and a collected ed. of his essays was issued 1923-6. See life by A. T. A. Dobson, 1928.

Dobson, William (1610-46), portrait and historical painter, b. Oxford. He was apprenticed as a boy to Peake, a picture-dealer. Van Dyck befriended him, and

he became his pupil though not his imitator, succeeding him as court painter to Charles I, but developing a masculine style of his own. D. painted portraits of Charles I, the prince of Wales, Prince Rupert, and sev. courtiers. Examples of D. in the National Portrait Gallery, London, are: 'Francis Quarles,' 'Endymion Porter,' and others. There are also 3 at Hampton Court. 'The Decollation of St John' is one of his best historical works.

Dobson, William Charles Thomas (1817-1898), Eng. artist, b. Hamburg. His paintings were mainly on historical and scriptural subjects, including 'Tobias and the Angel,' 1853; 'The Charity of Dorcas,' 1854; 'The Holy Innocents,' 1858; 'The Good Shepherd'; and 'St Paul at Philippi,' 1873, in the Diploma Gallery.

Dobu, is. of Melanesia, SE. of New Guinea. The islanders are yam growers and fishermen. Residence at marriage is 1 year at the wife's home and 1 at the husband's, and so on alternately; marriage is unstable and divorce is frequent. The islanders have elaborate belief in witchcraft and sorcery. See R. F. Fortune, *The Sorcerers of Dobu*, 1932.

Docetae, or **Docetism** (Gk *doktein*, to appear), name given in the early Church to a group of heretics who believed that during His life on earth Christ had no real but only an 'apparent' or phantom body. The doctrine originated in the Gk, Oriental, and Alexandrine theory that since 'matter' is essentially impure and imperfect, the union of the divine spirit with matter was impossible. It appears in its most developed form among the Gnostics and Manichaeans, and its believers were divided into 3 groups: those who held that the body of Christ was a real, earthly body, but had no essential connection with His divine nature; those who declared that His human body was a mere phantom, a delusion (Marcion, the Ophites, and Manichaeans); and those who declared that it was an ethereal body, descended with Him from heaven (Valentinus, Basilides). The theory precludes the idea of the virgin birth and the crucifixion, or holds them to be only 'phantoms.' The docetic doctrine appears among the Priscillianists and the Bogomils, and also among a small faction of the Anabaptists. See GNOSTICISM; also Dorner's *System of Christian Doctrine*, 1880; and Harnack's *History of Dogma*, 1894-9.

Dochart, riv. and loch of Perthshire, Scotland. The riv. carries off the surplus waters of the loch, and flows in a NE. direction for 13 m., finally entering Loch Tay at Killin. The Falls of D. near Killin are famous. Salmon, pike, and trout are plentiful in the stream.

Dock, common name of many perennial tap-rooted species of *Rumex*, a genus of Polygonaceae. *R. crispus*, the curled D., *R. obtusifolius*, the broad-leaved D., *R. pulcher*, fiddle D., and *R. hydrolapathum*, the greater water-D., are all species found in Britain as weeds, and the leaves are used by children as a cure for nettle stings.

Dock, in marine and riv. engineering, a

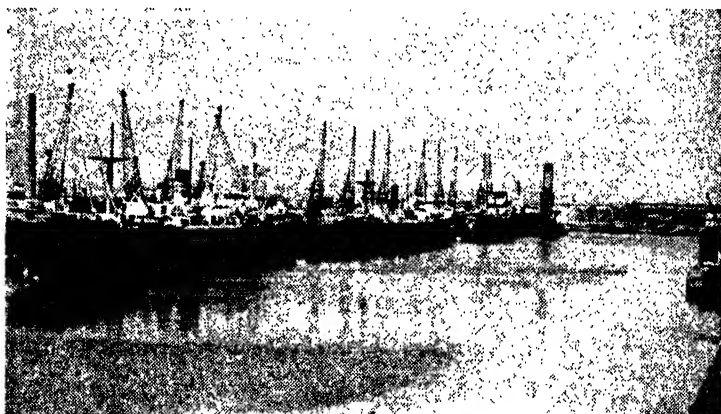
space or structure in or upon which ships may be placed to discharge or load cargo, or to undergo repairs. There are 2 main classes of D.: the wet D., with which the tidal D. may be classed, and the dry D., with which the floating D. may be considered.

A *wet dock* is a basin in a sheltered position, where vessels may lie alongside quays, which are fitted with proper appliances for taking on or discharging cargo. It adjoins the sea coast or a tidal riv., and is closed with gates so that the water in it may be retained at a uniform level independent of the tide. Quays usually surround the D. as much as possible, as it is of importance to secure as large a quay area as possible. The disadvantage of the wet D. is that vessels are able to enter or leave it only at high tide when the water outside and inside is at the same level. This disadvantage is minimised by locks which receive the outgoing vessel at the D. level, and then, by letting water out, drop it to the outside level. The depth given to a D. depends upon the depth of the channel by which it is approached. The depth of channel available for vessels is reckoned from the high-water of the lowest neap tides. The period of time over which vessels can daily enter the D. depends upon the range of the tide. The approach channels to some of the S. Wales ports are inaccessible at low tide, for they are then nearly dry. It is in places where the range of tide is very great that the wet D. is used in preference to the tidal D. At Liverpool, England, which possesses one of the finest D. systems in the world, the difference in level is over 30 ft., while in the Thames it is some 20 ft. Where the difference is more than 12 ft. wet D.s are a necessity. The Liverpool D. system was developed greatly at the end of the 19th cent., and the D. area is now some 1100 ac. The largest D.s are the Canada (18 ac.), the Langton (18½ ac.), and the Alexandra (17½ ac.), with its branch D.s, area 44½ ac. The W. Float D., with a water area of 52 ac., is the largest on the Birkenhead side of the riv. The Port of London D.s cover an area of 4247 ac. with a water area of 722 ac., and provide 48 m. of quays. The King George V D. is connected with the Royal Albert D. and the Royal Victoria D., together forming the largest sheet of enclosed dock water in the world. The system is known as the 'Royal Docks' and affords 11 m. of berthing accommodation for shipping. The total area of these 3 D.s (including land for extension) is 1102½ ac., water area 247 ac., length of prin. entrance 800 ft., width of prin. entrance 100 ft., depth of prin. entrance 45 ft. and quaysage 12½ m. These great Thames D.s are 40 m. from the sea and only 5 m. by road from the heart of London. Other important London D.s are the London, St Katharine's, Surrey Commercial, E. India, W. India, and Millwall. The E. India D.s have a total area of 67½ ac., water area 31½ ac., length, width, and depth of prin. entrance 300 ft., 80 ft., and 31 ft. respectively, and quaysage 1½ m. The Tilbury D.s, the

first D.s in the Port of London on approaching from the sea, are 24 m. from the Thames Estuary. They consist of a main D. and 3 branch D.s. Their total area is 725 ac., water area 104½ ac., length, width, and depth of prin. entrance lock 1000 ft., 110 ft., and 45½ ft respectively, and quayage 4 m.

A *tidal dock* is a basin similar to that described above, but open to the harbour waters, so that the level of the water in the D. rises and falls with the tide. D.s of this kind are suitable where the difference between levels at high and low tide is small. This state of things prevails on the shores of the Mediterranean and the

from which the water can be pumped so as to leave the vessel's hull dry for repairs, repainting, cleaning, etc. The dry D. has access to the sea from one end only, and this end is furnished with gates, or caissons, fitted with sluices, so that the water may be drained away; but when it has access to a wet D. the water must of course be pumped out. The other end is generally shaped round in the form of a ship's bows. On the face the walls are stepped, the steps being known as 'altars.' The bottom is heavily paved, and slopes downwards from the centre so as to allow any water left in the D. to drain out. These D.s were formerly constructed of



Bristol Development Corporation

AVONMOUTH DOCKS

Atlantic coast of N. America, and as examples of such D.s we may cite those at Marseilles, Genoa, and Naples in the Mediterranean and the Atlantic D.s, Brooklyn, in the U.S.A. Wet and tidal D.s are usually constructed on low-lying land near the estuary of a riv. The D. is here somewhat sheltered, and the excavation of the basin is facilitated by the lowness of the land. The riv. acts as an approach channel, and if, as in the case of the Albert and Victoria D.s, and Chatham dockyard on the Medway, a sharp bend in the riv. is utilised, upper and lower entrances are easily provided. Other notable examples of D.s formed on low-lying land adjoining a tidal riv. are those at Liverpool, Hull, Southampton, Belfast, Antwerp, Rotterdam, Hamburg, and St Nazaire. In the Mediterranean ports, where the basins are actually in the sea, breakwaters, as at Marseilles, are built to act as shelters. Examples of sheltered D.s, constructed on low-lying land bordering the shore and with direct access to the sea, are Swansea, Hartlepool, Barrow, and Bombay.

Dry, or graving, docks are basins of particular shape, which can be closed, and

timber in America, but they are now universally constructed, as formerly in Europe, of masonry, brickwork, or concrete. The 'altars' are lined with granite blue-bricks, or specially strong concrete, and additional steps and means of access are provided for the men to ascend and descend. Along the centre line of the D. bottom are keel-blocks, upon which the ship settles as the water is pumped out. When brought into the D., which is of a length and depth sufficient to receive the largest vessels frequenting the port, it is placed carefully in position over the keel-blocks, and shored up with timber shores resting on the steps, which retain it in an upright position as it settles down. The King George V Graving D., Southampton, opened by King George V in 1935, is the largest dry D. in the world. It is 1200 ft by 135 ft. The largest London dry D., out of 33, is the Tilbury, which is 846 ft long, 70 ft wide at the entrance, and 35 ft deep. The size of the Canada D., Liverpool, is 925 ft long, 94 ft wide at entrance, and 31 ft deep at high water.

Flotting docks serve the same purpose as graving D.s. The advantages plainly are: (1) that the D. can be built in the

cheapest and best place, and then towed to its destination; (2) it can be moved from one port to another; (3) it usually costs less to work than a dry D., where the cost of pumping out the water is apt to be very great. The disadvantages are: (1) that the durability is so much less: a floating D. cannot be expected to last for more than 50 years; (2) the cost of maintenance is generally much higher; (3) it cannot be used for such large vessels as can the regular graving D. A sheltered site, with a considerable depth of water, is necessary for a floating D., which consists of a number of pontoons or watertight boxes, of which some form the bottom of the D. and others the 2 sides. The pontoons are divided into watertight compartments, and for filling or emptying these compartments there is machinery in the side boxes, usually steam-pumps. The lower boxes are at first filled with water so as to be well below sea-level. The vessel is then floated in, and carefully adjusted in position over the keel-blocks. The water is then pumped out from the watertight compartments, and the bottom of the D. rises, lifting the vessel with it. Shores are at the same time placed between the hull and the side walls to retain the vessel in position. This continues until the hull of the vessel is well out of the water. The repairs are made, the D. is sunk, and the vessel floated out. Stability is ensured by making the displacement of that part of the D. below the bridge greater than that of the upper part of the D. plus the greatest vessel it could take. Floating D.s are constructed of iron and steel, and are carefully overhauled at regular intervals. The difficulty of doing this has led to a notable improvement in form. Under the old system, the floating D. had itself to be brought into dry D. at regular intervals. Now, however, the floating D.s are made self-docking: they are constructed in 3 parts, so that if one of these requires cleaning it can be detached and dry docked on the other 2 parts as though it were itself a vessel.

Dock entrances and locks. Access to a D. may be either by entrance or by a lock. The former is used when possible. Entrances consist of 1 or more pairs of gates at the opening of the D. These are fitted with sluices, closed by vertical sluice-gates, which are worked by hydraulic pressure. In the case of a dry D. opening on to the sea, these enable the water to be drained entirely away, and in this case they are supplemented by culverts in the side walls. In the case of a wet D. they serve to bring the water in the D. down to the level of that outside. These entrances are economical, not only in money but also in space, and it is much more easy for a vessel to pass through them. The disadvantage is that they are available for a comparatively short period of time daily, unless the difference between high- and low-water levels be very small. Locks, on the other hand, form a watertight compartment *outside* the D. itself. At each end they are fitted with sluice-gates, as are the entrances. They are

constructed on the same plan as the locks on canals (q.v.) and rivers, but the scale is much greater and more elaborate. When it is required to pass a vessel out from the D. into the open channel, water is first passed through the sluices from the D. to the lock-chamber, so as to bring both to the same level. The gates between them are then opened, and the vessel passes into the lock-chamber. This pair of gates is then closed, and the other sluices are employed to bring the water in the lock-chamber down to the level of that outside. The outer gates are then opened and the vessel leaves by that entrance. The lock-chamber must be long enough to receive the largest vessels likely to need docking. The gates which close the entrances and locks are constructed either of wood or of iron, braced carefully so as to resist the pressure of the water. The leaves are constructed to meet absolutely truly in the centre, and the greatest care is also exercised to make the union of the heel-posts and side walls thoroughly watertight. Of woods, greenheart is the most suitable in salt water, best resisting the action of the teredo. D. gates are sometimes made straight and sometimes segmental. Rollers are often placed along the floor to support the outer ends of the gates in very wide locks. Sliding or floating caissons sometimes take the place of gates.

Recent Developments. The construction since 1945 of very large aircraft carriers and of large numbers of tankers more than 700 ft in length has focussed attention on the strategic and commercial importance of a sufficiency of dry D.s of commensurate size. There are 33 dry D.s in the world 1000 ft in length or more, of which 10 are in the Brit. Commonwealth (distributed to cover most of the world's main sea routes), 10 about the seaboard of the U.S.A., and 8 in Europe. The construction of such a D. is a cap. project of deterring magnitude. Only 2 in that category have been completed since the war, the Sturrock D. at Cape Town (1181 ft) and the Capt. Cook D. at Sydney (1133 ft). The Sturrock D. cost £3½ million, but a 1145-ft D. under construction at Naples is to cost £8½ million, and naval dry D.s planned for Boston, Bremerton (Washington), and Mare Is. (San Francisco) will cost £9 million each. A dry D. on the Clyde capable of accommodating the largest merchant and naval vessels has for long been projected, but the financial obstacles have hitherto been insuperable. The N.E. coast has been the scene of the most extensive developments in this country since the war, where 3 new D.s, between 675 and 710 ft in length, have been completed, and a fourth is planned. See F. N. Du Plat-Taylor, *Docks, Wharves, and Piers*, 1928, 1934, and 1949.

Dock Dues, see TONNAGE DUES.

Dock Warrants. In England, are certificates given to the owners of goods warehoused in the docks. When goods are transferred the certificates are endorsed in favour of the purchaser, and thus become a warrant for the removal of goods. Under the Factor's Act of 1889 they are a

'document of title,' and any person lawfully in possession of one, although not the owner of the goods, by endorsement and delivery of it has the absolute right to all goods described in it. Warrants may be obtained for the whole or a part of the goods consigned. All D. W. require a 3d. stamp.

Docking, operation for removal of part of the tail of an animal. The Docking and Nicking of Horses Act, 1947, makes it illegal—except on veterinary advice—to remove any part of the tail of a horse in Great Britain or to import a docked horse, save under special licence from the Ministry of Agriculture, Fisheries, and Food. Formerly it was the fashion to dock practically all horses. Hackneys were commonly nicked by cutting tendons or muscles in the tail in order to make the tail permanently erect, with a view to improving the appearance of the trotting horse. D. is still a common practice amongst certain breeds of dogs, but it is illegal to dock the tail of a puppy after its eyes are opened (i.e. a few days old), unless the animal is under the influence of an anaesthetic. Lambs on lowland grazings are regularly docked to prevent attacks of the maggot fly (q.v.).

Dockyards, **Government** (in America called **Navy Yards**), in the fullest meaning of the term are the establs. where warships are built and repaired, supplied with stores, ammunition, and men, and put in a state of complete efficiency. As a fact very few yards are so complete. In many of them there is no ship-building at all, while in many more, although the frame of the ship is built in the gov. yard, the machinery and fittings are supplied from the workshops of some engineering firm. All Brit. D. are under the Admiralty, and governed by officers under an admiral-superintendent at the larger yards, and a captain-superintendent at the smaller. All Admiralty instructions with regard to the building or commissioning of ships are directly conveyed to the superintendent, as well as to the officers more nearly concerned with the carrying out of the instructions. The chief Admiralty official is the Controller of the Navy (Third Sea Lord of the Board of Admiralty), and below him are the Directors of D.s, the Director of Stores, and the Director of Naval Construction. The chief artisans of a D. comprise the engineers, shipwrights, platers, caulkers, joiners, smiths, sail-makers, rope-makers, and a large body of labourers. The scale of pay is determined bi-annually by a special board. The great D.s of the U.K. are Portsmouth, Devonport, Chatham, and Rosyth, with smaller ones at Sheerness and Portland; of the Commonwealth, Malta, Gibraltar, Singapore, Hong Kong, Simonstown (transferred to S. Africa in 1957), Sydney (New S. Wales), Halifax (Nova Scotia), and Esquimalt (Brit. Columbia). During war the R.N. has to use many commercial ports as additional temporary bases, and Scapa Flow, owing to its suitable geographical position, was used as a base for the Home Fleet during the 2 World Wars. *See also* SINGAPORE

BASE. The prin. D. of France are at Cherbourg, Brest, Lorient, and Toulon; of U.S.A., Norfolk, San Diego, Charles-town, and Brooklyn; of Italy, Spezia, Naples, and Taranto; of Russia, Leningrad, Kronstadt, Sevastopol, Vladivostok, and Nikolaiev.

Doctor (Lat. 'teacher'), one who is skilled or learned in any branch of knowledge, or whose attainments entitle him to express an authoritative opinion. As a title or degree it is granted by univs. to those who have attained the highest qualification, and ranks above master; but the ranks vary: thus in divinity, law, music, etc. there are no masters, and the lower degree is bachelor; in other faculties such as arts there are no D.s. In the 14th cent. the degree of D. was conferred in medicine, and in common parlance a 'D.' means a physician, or, quite generally, a qualified medical practitioner, whether he has taken the degree of D. of Medicine, M.D., or not. The first univ. degree of D. was granted at Bologna in the faculty of law, in the 12th cent. The faculties in which the degree is granted are too numerous to specify, and new faculties tend to spring up with the growth of specialisation. The D. of Philosophy (D.Phil. or Ph.D.) degree is acquired by many post-graduate students in all faculties. The univs. are accustomed to grant honorary doctorates to members of other univs., and to those who have distinguished themselves in a particular branch of knowledge, or who are prominent generally, such as distinguished statesmen, military and naval officers, scientists, artists, writers, etc. Of these honorary degrees those of D.C.L., D. of Civil Law, at Oxford, and LL.D., D. of Laws, at Cambridge, are perhaps of the highest distinction.

Doctors' Commons, the name formerly given to a society of eccles. lawyers in London, forming a distinct profession for the practice of civil and canon laws, and also to the buildings erected by them, 1567, on St Bennet's Hill, St Paul's Churchyard, under Harvey, Dean of the Arches. The houses (so called from the 'community of board' of members of the college) were destroyed by the Great Fire, 1666, but restored in 1672. Advocates and 34 proctors (corresponding to attorneys and solicitors), all Oxford or Cambridge graduates duly admitted by the Archbishop of Canterbury, lived there, headed by a president (Dean of Arches for the time being). Incorporated by Royal Charter, 1768, but on estab. of the Divorce Court and Probate Court the college was dissolved and the property sold, 1857, the various courts (Courts of Arches, of Admiralty, of Delegates, Prerogative, Faculty, and Archdeacon's Court) being now open to the whole Bar. The buildings were demolished in 1867, but the old name still survives. In 1874 the D. C. Will Office was removed to Somerset House.

Doctrinaire, theorist who pays no regard to practical considerations, generally a political ideologist. The term is of Fr. origin, and was bestowed upon a group of politicians at the time of the Restoration

(1815-30), who desired a constitution in France modelled according to historical principles and the monarchical system in England, and were opposed to absolutism as much as to revolutionary principles. The leaders were Royer-Collard, Guizot, and the Duc de Broglie.

Dodd, Francis (1874-1949), artist, b. Holyhead. Received his artistic training at the Glasgow School of Art and in Paris and Italy. A.R.A., 1927; R.A., 1935. A trustee of the National Gallery of Brit. Art (1928-35). As an official war artist he painted a series of portraits, 'Generals of the British Army,' during the First World War. His 'Interrogation of a German Prisoner' is in the Imperial War Museum. He is represented in the Tate Gallery by 'A Smiling Woman,' bought by the Chantry Bequest in 1924, and other works. He also executed a number of water-colours portraying some of the older London suburbs—Blackheath, Brixton, and Dulwich.

Dodd, William (1729-77), Eng. forger and man of letters, educ. at Clare College, Cambridge. He took holy orders in 1751. He soon became a popular preacher, and attracted large congregations to the Magdalen House, of which he was chaplain from its inauguration in 1758. In 1763 he was appointed chaplain to the king, and soon after became tutor to Philip Stanhope, godson and heir to Lord Chesterfield. He became a noted person in society, but, living beyond his means, got into such straits that in 1777 he forged a bond for £1200 in the name of Lord Chesterfield. The forgery was discovered, and D. was sent for trial, condemned to death, and subsequently hanged, in spite of the efforts of Samuel Johnson and others on his behalf. Of D.'s many books, the best known is the vol. of selections entitled *The Beauties of Shakespeare*, 1752, reprinted many times. Besides some contemporary anonymous memoirs, there is a biography by P. Fitzgerald, *A Famous Forgery, being the story of the Unfortunate Dr. Dodd*, 1865.

Dodd Mead, Amer. firm of book publishers, founded in 1839 in New York City, its earliest pubs. being of a religious nature. Over the last century the company has expanded rapidly, acquiring many pub. rights, including those of the original John Lane Company, acquired in 1922. The direction of the firm is still largely in the hands of the D. family.

Dodder, name applied to sev. Brit. species of *Cuscuta*, a parasitic genus of Convolvulaceae. The plants twine round the branches of woody or other plants, strike minute suckers in their bark and thus obtain their necessary sustenance. *C. europaea*, the greater D., attacks heath, furze, nettles, hops, and other plants. *C. epitimum* is the flax D., *C. trifolii* attacks clover, and *C. epithymum*, the common D., takes as host sev. low-growing plants.

Doddridge, Philip (1702-51), Eng. dissenting minister and writer. In 1729 D. opened at Northampton an academy for educating Nonconformist ministers. He formed a society for distributing Bibles

to the poor, and paved the way for foreign missions among Nonconformists. His chief works are: *The Family Expositor*, 1739-56; *Of the Evidences of Christianity*, 1743; *Rise and Progress of Religion in the Soul*, 1745; *Course of Lectures* (pub. by Clarke), 1763; and hymns. See J. D. Humphreys (ed.), *Correspondence and Diary of P. Doddridge*, 1829-31.

Dodds, Sir Edward Charles (1899-), physician and biochemist, b. Darlington. He received his medical education at the Middlesex Hospital, London, and graduated M.D. in 1926. He is a fellow of the Royal Society (1942) and of the Royal College of Physicians (1933), of which latter he has also been Harveian Librarian since 1949. Since 1925 he has been Courtauld prof. of Biochemistry and director of the Courtauld Institute at Middlesex Hospital. He is the recipient of many high awards in the medical field, and a distinguished lecturer. With his colleagues he synthesised stilboestrol (1938) and other sex hormones, of great value in treatment of endocrine disorders and in cancer of the prostate. He was knighted in 1954.

Dodecahedron, see POLYHEDRON.

Dodecanese Islands, the name, which means '12 islands,' now given to those is. of the S.E. Aegean which were seized by Italy from the Turks in 1912 and were ceded to Greece after the Second World War. They are also known as the S. Sporades. In the Middle Ages the term D. was applied to a group in the Cyclades Is. (q.v.). After the Turkish conquest of the archipelago it was used for certain is., of which Cos was the chief, which had special privileges. The Italians extended it to include all the Aegean Is. under their rule. The chief is. of the D. are Rhodes, Cos, Astypalaea, Calymnos, Carpathos, Casos, Castellorizo, Leros, Nisyros, Patmos, Symi, and Telos. Except for small communities of Turks and Sp.-speaking Jews in Rhodes and Cos the inhab. are Greeks. There are few minerals. The chief occupations are agriculture and fishing; sponge fishing is important. The chief crops are cereals, olives, vines, oranges, figs, potatoes, tomatoes, and tobacco. The chief animals are sheep and goats. There is much small coastal shipping. Roads are few and land transport is mostly by pack animals. There is an airport on Rhodes. The D. were colonised from the Gk mainland in the 11th cent. BC. Rhodes became the dominant is. and in Hellenistic times was a prosperous state and naval power. In 1310 the Knights of St John occupied Rhodes and they held most of the D. till the Turks took Rhodes in 1522. Under the Turks the D. had considerable freedom. They were seized by Italy in 1912 and ceded by Turkey at the Treaty of Lausanne (1923). Italy spent much money in the D.; Rhodes was developed as a tourist resort. Leros as a naval base, and antiquities were carefully preserved, but the people had no political rights and efforts were made to impose It. culture. It. bases were bombarded by the Brit. in 1939. In 1943, after Italy's surrender,

the Brit. landed on Cos and Leros but were expelled by the Germans. The D. were formally incorporated in Greece in Mar. 1948, and now constitute an administrative dept. Area 1022 sq. m.; pop. 121,500. *See also* ARGÆAN SEA AND ISLANDS and ITALIAN FRONT in SECOND WORLD WAR.

Dodecatheon, genus of plants of the Primulaceae. They are hardy perennials, and easily cultivated in gardens with well-drained soil. The flowers, which somewhat resemble cyclamen, are variously coloured. *D. integrifolium* has clusters of handsome, rosy-crimson flowers. *D. jeffreyi* is reddish purple. *D. meadia* is pale lilac. Various hybrids derived from crossing *D. meadia* with other species are popularly grown; of these *D. m. lanceifolium* has large leaves and red flowers with yellow markings. Amer. cowslip is the popular name for the genus.

Dodge, Mary Elizabeth Mapes (1838-1905), Amer. authoress, b. New York. For some years she assisted Harriet Beecher Stowe and Donald G. Mitchell in editing *Heath and Home*. In 1873 she was appointed editress of *St Nicholas*. Besides numerous contributions to periodicals she wrote *Irrington Stories*, 1864; *Hans Brinker, or the Silver Skates*, 1865; *Rhymes and Jingles*, 1874; *Theophilus and Others*, 1876; *When Life was Young*, 1894; and the vols. of poems *Along the Way*, 1879, and *Poems and Verses*, 1904.

Dodgson, Charles Lutwidge, *see* CARROLL, LEWIS.

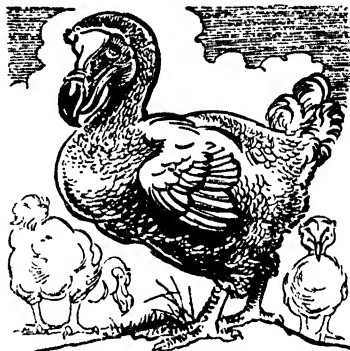
Doddington, George Bubb, 1st Baron Melcombe (1691-1762), son of Jeremiah Bubb, an Irish apothecary. In 1720 he took the name of D. on inheriting an estate from his uncle. In 1715 he was elected to Parliament, and was member for Bridgwater (1722-54). He was constantly changing sides, serving in succession Walpole, the prince of Wales, the duke of Argyll, and the prince again. He was a patron of Young and Thomson, and wrote some poems himself, but he is only remembered for his posthumous *Diary* (ed. by H. P. Wyndham, 1784), which reveals the intrigues of his time and his own egotism. He was created Baron Melcombe in 1761.

Dodman, The, lofty headland of S. Cornwall, England, 8 m. S. of St Austell. It is now the property of the National Trust.

Dodo, a large extinct flightless bird, belonging to the order Columbiformes in the family Raphidae, which formerly inhabited Mauritius. It was exterminated by early settlers around 1681, and its remains occur in peat-bogs on the is. The bird was as large as a turkey, of unwieldy build, with short curly tail-feathers and rudimentary wings; the bill was blackish in colour, forming at the end a horny hook, and the abortive keel also indicated its flightless condition. *Raphus cucullatus* was the species in Mauritius; *Raphus solitarius* in Réunion.

Dodona, ancient in Epirus; seat of the earliest Gk oracle, which was dedicated to Zeus and administered by priestesses known as *peleiai* (doves). The god was

believed to speak generally through the sound of wind in an old oak tree, but sometimes through the cooing of doves in its branches, or through the clanging of bronze vessels hung round the tree or temple. This temple of Zeus Naios was destroyed by the Aetolians in 220 BC, but the oracle lasted into Rom. imperial times. Extensive excavations have been made at D., which was also, in the 5th and 6th cents. AD, the seat of a Christian bishopric.



DODO

Dods, Marcus (1834-1909), theological scholar. In 1889 he was appointed prof. of N.T. Exegesis in New College, Edinburgh, of which he became principal in 1907. Among his most important writings are: *Israel's Iron Age*, 1874; *Mohammed, Buddha, and Christ*, 1877; *On Genesis*, 1882; *The Gospel according to St John*, in the Expositors' Gk Testament, 1897; *The Bible, its Origin and Nature*, 1904.

Dodsley, Robert (1703-64), author and bookseller, was in early life in domestic service as a footman. While so engaged, he wrote occasional verses and received encouragement from his employer, the Hon. Mrs Lowther, and later the active patronage of Defoe. He pub. *Scrittude*, 1729, later reissued as *The Footman's Friendly Advice to his Brethren of the Livery*, 1731; *A Muse in Livery*, 1732; and other vols.; and in 1735 his dramatic satire, *The Toy-Shop*, was staged by Rich at Covent Garden Theatre. In the same year D., with capital supplied by Pope and others interested in him, set up as a bookseller at the sign of Talby's Head in Pall Mall. He continued throughout his life to write books and plays, but it is as a bookseller he is now best remembered. His first important venture as a publisher was in 1737 when he issued Pope's *First Epistle of the Second Book of Horace imitated*. In the following year he brought out Dr Johnson's *London*. In 1759, joined by his younger brother James in the business, he pub. Goldsmith's *Polite Learning*, and in the same year he retired into private life, with an ample competence and a host of friends. It was

James D. who, after having refused a first version of *Tristram Shandy*, brought out Sterne's masterpiece, purchasing the copyright of the first 2 vols. for £250, and of the 3rd and 4th vols. for £380. D.'s chief claim to fame now rests on his *Select Collection of Old Plays*, 12 vols., 1744. He was also co-founder of the *Annual Register*, 1758. See R. Straus, *Robert Doddsley, Poet, Publisher and Playwright*, 1910.

Dodsworth, Roger (1585-1654), antiquary. He collected materials for a hist. of Yorks and an Eng. baronage and pub. in collaboration with Sir Wm Dugdale a *Monasticon Anglicanum*, 1655.

Dodwell, Henry (1642-1711), theologian and chronologist. In 1688 he was elected Camden prof. of hist. at Oxford, but was deprived of his post on refusing to take the oath of allegiance to William and Mary in 1691. His theological works are of far less value than those on classical chronology.

Doe, see DEER.

Doe, John, and Roe, Richard, see FICTION, LEGAL.

Doenyo Egere, see KENYA, MOUNT.

Dog, term designating a quadruped of the domesticated variety, *Canis*, which may be extended to include wild D.s, jackals, foxes, wolves, etc.

Origin. Darwin believed the D. to be descended from 2 species of wolves, *Canis lupus* and *Canis latrans*, as well as from certain European, Indian, and African canine species, and from the jackal. The arguments in favour of the wolf origin are that the D. and wolf will interbreed with each other, and that the progeny thus obtained will again breed with either the D. or the wolf, whereas most hybrids are not fertile. On the other hand the domesticated D. is in one feature very different from the wild Canidae. The pupil of its eye is round, whereas in the wolf the pupil is placed obliquely, and in the fox and jackal perpendicularly.

Chief Characteristics. The dog is digitigrade, assisped, with slender legs, the fore feet having 5 toes, the hind feet 4, with non-retractile claws. The head is small, the muzzle pointed, but the shape of the head differs greatly in various species. The neck is short and thick-set. The teeth usually consist of 6 incisors, 2 canines, and 8 premolars in all, but the numbers vary. The upper jaw has 4 molars and the lower has 6. The vertebrae of the tail vary in number, and some species have no tails. The tongue is smooth. The mammae are sometimes 4, sometimes 5, on each side. The period of gestation is 63 days. There are 4 to 8, occasionally as many as 20, pups in a litter. The young are born blind and remain so for about 10 days. The average life of a D. is from 10 to 14 years, though some live to be 20. The D. has a very acute sense of smell, and can readily be trained, for it has a good intelligence. By nature it is carnivorous, and in a wild state D.s will combine to hunt out prey. A D. will feed on birds or fresh meat; in cold countries it eats fish, and some kinds of D. will also eat crabs, reptiles,

and insects. The Pariah D. of India feeds on carrion and offal, whereas the Chowchow of China is a strict vegetarian. See V. W. F. Collier, *Dogs of China and Japan*, 1921.

History. The D. was, apparently, the companion of man from the very earliest time. Canine remains have been found in the Dan. kitchen-middens of the Neolithic period side by side with human remains. The Egyptians held D.s in the greatest affection, almost veneration. The friezes of their temples were carved with figures of D.s, and many very early Egyptian monuments (dating from about 3000 BC) are decorated in like manner. The Jews, as we can see from the O.T. and N.T., regarded D.s with the utmost contempt, as unclean beasts. This feeling was perhaps the natural outcome of seeing the worship bestowed upon them by the neighbouring tribes of Egyptians and Syrians. Assyrian sculptures represent 2 forms, a greyhound and a mastiff, whereas the Egyptian represent a wolf-dog, greyhound, turnspit, and a kind of terrier. The Egyptians worshipped Sirius, a star, which they called 'Dog Star,' because of its faithfulness in appearing at a certain season to warn them of the approaching overflow of the Nile. The Ethiopians went still further, and elected a D. to be their king, whose growlings or fawnings they received as directions of govt. The Greeks used D.s in battle as well as in the chase. 'D.s of war' had spiked collars, and proved very valiant and dangerous fighters. Oppian, in his *Cynegética*, is the earliest authority who mentions the use of D.s for hunting. The Greeks had formerly used nets to ensnare animals, but later pursued their prey with D.s. The Romans divided D.s into 3 classifications: (1) *Canes venatici*, or hunting-D.s; (2) *Canes pastores*, or sheep-D.s; (3) *Canes villatici*, or watch-D.s. The hunting-D.s were further divided into *pugnaces*, who attacked the quarry, *nare sagaces*, who tracked it out, and *pedibus celeres*, who overtook it. Early Britain was renowned for its bloodhounds, which, according to Strabo, played an important part in the Gallic wars. During the Middle Ages D.s were used in England chiefly in sport. King John had a pack of other hounds. Bull-D.s, then called Butchers' Hounds, were used for catching cattle, and in the popular sport of bull-baiting. Juliana Berners (15th cent.) made out the following list of domestic D.s: 'A Grehoun, a Bastard, a Menkrol, a Mastif, a Lemor, a Spanyel, Raches, Kenettys, Teroures, Butchers' Hounds, Dunghyll Dogges, Tryndelatydes, Pryckeryd Currys, and small Ladyes' Poppes.' D.s have played a useful part in exploration, from the time of Columbus's discovery of America (1492) down to the Arctic expeditions of recent years. Among the most famous D.s in hist. are the bloodhounds who attacked Wm Wallace of Scotland when fleeing from the Eng.; the mastiffs of the Knights of Rhodes, who could smell out a heathen Turk in whatever disguise; and the D. who woke up William the Silent on the eve

of the attack at Mons to warn him of approaching danger.

Dogs in Literature. D.s are present in the mythology and folklore of the earliest peoples. In this connection should be mentioned Fingal's favoured companions, Bran and Luath; Cavall, 'King Arthur's hound of deepest mouth,' and Hodain, of the Tristram and Iseult story. In Gk mythology we have Argus in the *Odyssey*, Ulysses' faithful D., who recognised his master after an absence of 20 years. Such another D. was Maera, who, by his prolonged howling, directed Erigone to the spot where her father, Icarus, had been murdered. Maera was placed among the stars by Zeus, where he was known as Procyon ('little dog') or *Icarus Canis*. Another faithful D. in story is the Dog of the Seven Sleepers, who accompanied his masters to the cave in which they were confined, and stood on guard by their side for 300 years, without moving, eating, drinking, or sleeping. Mohammed admitted him into paradise under the name of Katmir. In folklore D.s have often been credited with mysterious knowledge of spiritual things, and have sometimes been uncanny friends of such magicians as Cornelius Agrippa. It was a rabbinical superstition that D.s howl at death. They were, too, depicted as terrible monsters, such as the snarling, many-headed Cerberus, who guarded the entrance to Hades on the farther side of the Styx. Among the D.s noted in Eng. literature are Pope's Bounce, Byron's Boatswain, Scott's Maida, Dandie Dinmont in *Guy Mannering*, Mrs Browning's Flush, John Brown's *Rob and his Friends*, and Gelert, the dog of Llewellyn. See *The Dog in History and Folklore*, in J. J. King's *Sketches and Studies, Descriptive and Historical*, 1874.

Uses of Dogs. The earliest races made a friend and companion of the D. No other animal shows such affection and gives such faithful service. D.s have been and are used in the hunt, for coursing and retrieving game. They are also valuable for collecting sheep and keeping the flock together, and are useful guards and watchers to keep off thieves. In the Arctic regions D.s drag sleighs and other vehicles across the snow. They have frequently saved people from drowning, and from suffocation in snowdrifts. Barry, the famous St Bernard, saved 40 lives. D.s are also employed as messengers, and for tracking criminals, for scouting, for ambulance work, and leading blind persons.

Classification. The various breeds of D. have increased greatly since the early part of the 19th cent., owing to careful breeding—by crossing, selecting, and interbreeding new varieties can be 'manufactured.' Many classifications have been made of D.s, though there is no generally accepted one. Cuvier recognised 3 main divs.—Mâtins, Spaniels, and Housedogs. Youatt enlarged this arrangement as follows: (1) those with more or less elongated heads, with parietal bones widest at the base of the skull, gradually approaching each other

as they ascend, and with the condyles of the lower jaw on a line with the upper molar teeth, e.g. the Irish Wolfhound, Greyhound, etc.; (2) those with heads moderately elongated, and with the parietals diverging as they ascend, thus enlarging the cerebral cavity, e.g. the St Bernard, Newfoundland, Sheep-D., Spaniel, Setter, etc.; (3) those with more or less shortened muzzles, large frontal sinuses, and elevated and diminished cranium, e.g. the Terrier, Bull-D., and many toy D.s. Fitzinger divided D.s into 180 different classes. A very practical classification is that of Rawdon B. Lee (in *Modern Dogs*, 1897), into sporting and non-sporting D.s. These 2 great divs. have been defined by F. C. S. Pearce in the *Kennel Club Stud Book*, 1874, and were defined in further detail by that club in 1900, so that there might be no misunderstanding on the part of intending exhibitors. Gun-D.s and terriers are included in the classification of sporting breeds, and toys under non-sporting.

Breeds of Dog. The Kennel Club has registered 92 different varieties of D. But, with the free interbreeding of various types, many intermediate species occur, which account for the 185 types differentiated by naturalists. Numerous foreign D.s have been imported into the U.K.: the Dachshund, the Schweisshund, and a breed of Mastiff from Germany; the Chesapeake Bay D. and the Boston Terrier from America; the Chow from China; the Japanese Spaniel from Japan; the Poodle from France; and many others. These and Brit. D.s are dealt with in separate articles.

Wild Dogs. Among the wild D.s may be included the Wolf (*Canis lupus*), the Fox (genus *Vulpes*), and the Jackal (*Canis anthus*, *Canis aureus*, etc.), which are considered in special articles. Other wild D.s may be divided into 4 groups, African, Amer., Asiatic, and Australian.

1. *African wild dogs.* Two types of wild D. occur in S. Africa. The Hyæna D. (*Canis* or *Lycan pictus*), or Cape Hunting-D., is about the size of a wolf, and varies in colour, generally having large, irregular patches of black, yellow, and white. It is found in the region of the Cape and through the E. belt of Africa as far as Kordofan. It runs in packs, and is semi-nocturnal, semi-diurnal. It is very swift-footed, and has 3 different and most curious cries. The Long-eared Cape D. or Fox (*Otocyon* or *Megalogotis lalandii*) stands about as high as a fox, and has a bushy tail about 2 ft long. Its ears are very large and quite out of proportion to its head; they are held very erect. It has 6 more teeth than the average D.

2. *American wild dogs* include the Canisiss, or Crab-eating D. (*Cerdocyon thous*), found in a region of S. America extending from Orinoco to La Plata; the Bush D. (*Speothos venaticus*), found in Brazil and Brit. Guiana: it is short-limbed, and varies in colour from red round the head and shoulders to black in its hind-quarters; *Pseudalopex gymnocercus* is found in the region of the Andes: it is a solitary animal, which comes out at night

to seek its prey; in colour yellowish, or reddish-brown verging to black.

3. *Asiatic wild dogs*. The Pariah D. is very common in the E. where it moves about in bands, acting as scavenger and feeding on offal. The Dhole, also called Kolsun, and Bhuasuh (*Cuon javanicus*), is found in various parts of India. It is rather larger than the Jackal, and has a full, rather long tail. It hunts in packs of about 50, and is absolutely fearless in attack. Its habits are nocturnal, and it has a very keen scent. In general the Dhole is untamable, though it has sometimes been employed for coursing and pig-sticking. The Raccoon D. (*Canis procyonoides*) occurs in N. China and Japan. It is so called (first by St G. Mivart) because of its resemblance to the raccoon. It has a pointed muzzle, a short and bushy tail, and short, round ears. Its body is arched and its legs stumpy. Its coat becomes thicker and longer in winter, and in colour is yellowish and brown.

4. *Australian wild dog*, or *Dingo* (q.v.). *Canis dingo*, is the only higher mammal (excluding man), native to that country.

Wild D.s can be and often have been tamed. In their natural state they hold ears and tail erect and do not bark. When tamed they will fawn, crouch, wag their tails, and lavish affection upon the master in the manner of an ordinary domesticated D.

Diseases of Dogs. *Distemper* is an infectious catarth of the mucous membranes of the eyes and nose. It generally occurs in D.s between the ages of 1 and 2 years, but may attack a D. at any age. The first signs are feverishness, loss of appetite, and depression. Complications may ensue and the skin is sometimes attacked. Nourishing food, such as gruel, milk, beef-tea, eggs, minced meat, etc., and careful nursing in a warm room are essential. The eyes should be frequently bathed in a solution of boracic acid, creolin, and water. *Rabies* (hydrophobia) is contagious and may be transmitted by means of a bite. The disease has often been prevented from spreading by muzzling every D. within a certain area, and is fortunately unknown in the U.K. The symptoms, however, are set forth on the reverse of every licence form issued. *Mange* may be common (or sarcoptic) or follicular. The former, which is parasitic in origin, is very contagious and spreads rapidly, the affected areas giving off an offensive odour. It is treated by the application of sulphur ointment to the bare patches, the remainder of the coat being dusted with flowers of sulphur. Follicular mange does not spread so rapidly, the parasite burrowing under the skin. The D. is irritable and restless but does not scratch. It is treated by washing with sulphur soap, but in severe cases it may be necessary to shave the animal to expedite the cure. *Scema*, also known as surfelt, or blotch, is a non-contagious skin eruption usually caused by irregular feeding and unwise over-feeding, unclean conditions, or lack of exercise. The best treatment is a change to a rational diet, scrupulous

cleanliness, and plenty of fresh air and exercise. Medicine must frequently be given internally, and the affected parts should be dressed. In all cases of serious canine illnesses a veterinary surgeon should be consulted.

Law as to Dogs. In the U.K. no person may keep a D. over 6 months old without a licence. The licence is obtainable at any post office, costing 7s. 6d., and must be renewed annually. D.s used solely for tending sheep and cattle, and for leading the blind, may be kept without a licence, certificates of exemption being obtainable from the commissioners of Inland Revenue. Anyone found keeping a dog not under these heads of exemption without a licence is liable to a penalty of £5. If a D. bites or attacks a person, on its second offence the owner is liable to an action for damages. The court may decide that such a D. should be destroyed. Dog-stealing, setting traps for D.s, injuring or killing D.s, etc., are offences punishable under criminal law statutes. Stray D.s, if not taken into homes for the purpose, may be adopted or sold, or destroyed by members of the police force. Accidental killing of a D. on the roads must be reported to the police. See F. Lupton, *The Law Relating to Dogs*, 1888.

Glossary of Technical Terms. *Apple head*, a head rounded on top; *blaze*, a white mark or streak on the head; *blue*, applied to shades of grey; *brisket*, the front of the chest; *brush*, the tail—usually applied to collies or sheep-D.s; *butterfly nose*, a spotted nose; *button ear*, where the tips of the ears fall over, covering the orifice; *cat foot*, a rounded, high-knuckled foot; *chops*, the pendulous underlip of a bull-D.; *cloddy*, stoutly built; *cobby*, compactly built; *couplings*, the part of the body between the shoulder blades and the hip joints; *cow hocks*, hocks that turn in; *dew claw*, extra claw; *develap*, loose hanging skin under the throat; *dish-faced*, when the nose is turned up and higher than the muzzle at the stop; *dudley nose*, a yellowish nose; *feather*, the hair on the legs and tail; *flag*, the tail, usually of a setter; *flews*, the hanging lips of a bloodhound and of some other breeds; *forearm*, the part of the foreleg that extends from elbow to pastern; *frill*, long hair on the chest; *hare foot*, a long narrow foot, carried forward; *haw*, the red inside eyelid, showing in St Bernards and bloodhounds; *hucklebone*, the tops of the hip joints; *leather*, the skin of the ear; *occiput*, the bony lump at the back of the head; *overshot*, the upper teeth projecting beyond the lower; *pastern*, the part of the leg below the knee; *pig eye*, small, sunken eye; *pig jaw*, an exaggeration of overshot; *pity*, applied to a soft, woolly coat; *rouch back*, an arched back; *rose ear*, where the tips turn back, showing the interior of the ear; *septum*, the div. between the nostrils; *snipy*, with a too pointed muzzle; *stifes*, the top joints of the hind legs; *stop*, the indentation below the eyes; *tulip ear*, an erect ear; *undershot*, the lower teeth projecting beyond the upper.

Dog Shows and Clubs. The first club in England was formed by Lord Orford in 1776, at Marham Smeeth, near Swaffham. Though coursing meetings have been held since the time of Charles I, the first actual show took place in 1859 at Newcastle-on-Tyne, under the patronage of Mr Pape and Mr Shorthose. Sixty D.s were exhibited, and the show was so popular that others were held in the same year at Birmingham and Edinburgh. Now that D.-breeding has become a lucrative business as many as 500 shows have been held in the U.K. in one year. The Kennel Club was founded in 1873 by S. E. Shirley, who held the position of president till his death in 1904. This club has had an enormous influence in improving the condition of various breeds, and in promoting the welfare of D.s in general. It has been instrumental in putting a stop to cropping of ears (1889), to mutilating the membrane of the mouth, and in some cases to docking the tail. It controls the different shows, and practically rules the canine world. It defines the recognised breeds, and maintains a breed register. Its own show was held in Oct. at the Crystal Palace until that place was burned down in 1936, while another famous D. show—Cruft's—is held annually at the Agricultural Hall, London. Other well-known clubs are the Ladies' Kennel Association and the Westminster Kennel Club. Most breeds of D. have their own particular club, such as the London Bulldog Society, the Dandie Dinmont Terrier Club, the Gamekeepers' Association of the United Kingdom, the Pomeranian Club, etc. The chief foreign and colonial clubs are La Société Centrale (Paris), the Italian Kennel Club, the American Kennel Club, and the South African Kennel Club. A D. is valued by its points, so many marks being assigned to each. For example, a bloodhound is valued thus: head, 20; ears and eyes, 15; legs and feet, 15; back and ribs, 10; chest and shoulders, 10; colour and coat, 7½; symmetry, 7½; flews, 5; neck, 5; stern, 5; total, 100. D.s vary considerably in price, as much as £1500 having been paid for a collie, and 1000 guineas for a bulldog. A fox terrier has more than once fetched 500 guineas, and a pointer 200. Ladies' toy D.s may be of great value, and have been sold for their weight in gold.

Books on Dogs. GENERAL AND HISTORICAL: J. J. King, *Sketches and Studies, Descriptive and Historical*, 1874; R. B. Lee, *Modern Dogs*, 1897; H. Compton, *The Twentieth Century Dog*, 1904; A. J. Dawson, *Everybody's Dog Book*, 1922; W. H. Miller, *The American Hunting Dog*, 1926; E. F. English, *The Dog Owner's Guide*, 1933, 1938; C. G. Trew, *The Story of the Dog and his Uses to Mankind*, 1940; C. L. B. Hubbard, *The Observer's Book of Dogs*, 1945, and *Working Dogs of the World*, 1947; B. Vesey Fitzgerald (ed.), *The Book of the Dog*, 1948. BREEDING: E. Mayhew, A. J. Sewell, and F. W. Cousins, *Dogs and their Management*, 1910, 1934; R. Leighton, *The Complete Book of the Dog*, 1922, 1927; O. E. M. Hollyer, *Dog-Keeping and Breeding*, 1926.

SICKNESS: J. W. Hill, *Management and Diseases of the Dog*, 1900; L. Sewell, *Canine Distemper*, 1925; O. E. M. Hollyer, *Dog Ailments*, 1927; A. J. Sewell, *The Dog's Medicine Dictionary*, 1932; M. H. Clark, *First Aid to Dogs and Cats*, 1941. **Journals.** Weekly, *The Field*, 1853; *Our Dogs*, 1895; and *The Dog World*, 1919. Monthly, *The Kennel Gazette*, 1880, and *Dogs*, 1946.

Dog-days (*Dies Caniculares*), the hottest period of the year in the N. hemisphere, generally reckoned now from 3 July to 11 Aug. Various dates, from 3 July to 15 Aug., were assigned for the first of the D. by the Greeks and Romans, and various periods of duration from 20 to 54 days. They were generally associated with the influence of Sirius, the 'dog-star,' and according to Pliny began with its heliacal rising on 19 July (New Style). They were regarded by the ancients as the most unhealthy period of the year, and as being the direct cause of madness among dogs.

Dog-fish, name given to any member of the Scyliorhinidae, a family of elasmobranch fishes. The species are marine, living all over the world in warm seas, and many fossil forms are found in the Jurassic and Cretaceous. There are 2 small spineless dorsal fins, a distinct spiracle, no nictitating membrane; the mouth is inferior and the teeth are small. The females are oviparous and the egg cases are 4-sided and large; in habit the fishes are predaceous. *Scyliorhinus caniculus* and *Sc. maculatus*, the small-spotted and large-spotted D., are Brit. species of small size.

Dog Licence, see Dog, *Law as to Dogs*.

Dog-watch, nautical term. The first D. is from 4 p.m. to 6 p.m., and the second from 6 p.m. to 8 p.m. See WATCH.

Dog-whelk, popular name of *Nassa reticulata*, a Brit. gastropod mollusc; it is also applied to the near species of *Purpura lapillus*, the dog-periwinkle.

Dogbane, or *Apocynum*, a genus of Apocynaceae, of which *A. cannabinum*, the Canadian hemp, and *A. androsaemifolium*, or fly-trap, both grow in N. America, and are used in medicine. *A. venetum*, D., is native to S. Europe.

Doge (Lat. *dux*, leader), former title of the chief magistrate of Venice, Genoa, and Amalfi. The 1st Venetian D., Paolo Lucio Anafesto, was elected c. 697 to replace the former 7 tribunes. At first their powers were largely undefined; their attempts to make the office hereditary were checked (1032) by a declaration that the election of a D. Consort (son with father) was illegal. The privy councillors (*consiglieri ducali*) were appointed instead. In 1172 the Great Council of 480 members was formed as a check on the D.s. Sebastian Ziani, the 1st D. chosen from the candidates of this council, introduced the custom of wedding the Adriatic by throwing a ring from the ship *Bucentaur*. Later a more elaborate method of selection was devised, and increasing restrictions were placed on the actual power of the D., who became more and more of a figure-head. The office disappeared on the fall

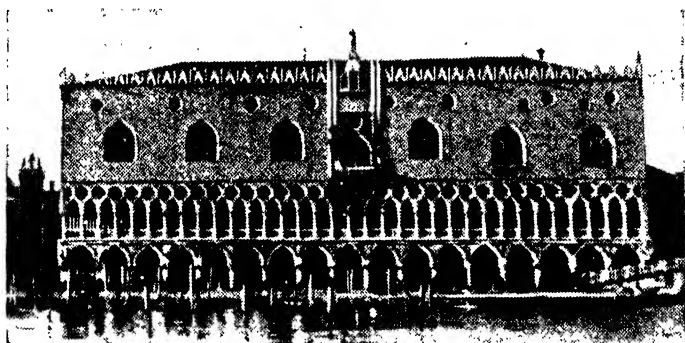
of the Venetian rep. (1797). The D.s of Genoa dated only from 1339. In 1528 restrictions were made on their power; in 1797, on Fr. occupation of Genoa, the office disappeared, and after a short restoration vanished for good in 1804. In Amalfi D.s existed from 897 to 1350. The D.s palace (Palazzo Ducale) at Venice is a Gothic building of the 14th and 15th cents., and was a residence of the councillors and D.s.

Dogger (Dutch *dogger*, codfish boat), vessel something like a ketch, with 2 masts, and of about 80 tons' burden, used in the cod and herring fisheries in the N. Sea.

Dogger Bank, extensive sandbank in the N. Sea, 50 m. from the nearest point on the Eng. coast. The average depth of

naval authorities. See also **HELIGOLAND BIGHT**.

Doggett, Thomas (d. 1721), actor, b. Dublin, who made his first appearance in D'Urfe's *Love for Money* in London, 1691. He was highly thought of, both for his acting and his personal character, and was associated with Cibber and others in the management of Drury Lane and the Haymarket. He is chiefly remembered, however, as the founder of the prize of 'D.'s Coat and Badge' in 1715, in honour of King George I's accession. The prize consisted of a red coat with a large silver badge on the arm, and was competed for by Thames watermen who had completed their apprenticeship within the 12 months prior to the race. The race took place on 1 Aug., and the course was from London



Canadian Pacific

THE DOGE'S PALACE, VENICE

the water above it is from 10 to 20 fathoms, but in some places there is a depth of only 6 fathoms. It is about 170 m. long by 65 m. broad, and is a famous fishing ground, probably obtaining its name from the Dutch *dogger*, a codfish boat. In 1781 the S. end of the bank was the scene of an indecisive battle between the Eng. and Dutch fleets under Adms. Hyde Parker and Zoutman. In 1904, during the Russo-Japanese war, a Russian fleet fired on the trawlers on the D. B. The excuse given was that there were Jap. torpedo boats among the trawlers. After a protest had been lodged a commission was appointed, which ordered Russia to pay compensation to the families of the victims. In the First World War the Battle of D. B. was fought on 24 Jan. 1915, between the Brit. and Ger. fleets, the former under the command of Adm. Sir David (later Earl) Beatty and the latter under Adm. Hipper. As soon as Hipper saw Beatty's fleet he made for Heligoland and the battle developed into a chase. The Ger. warship *Blücher* was hit very early in the action and sank. The *Seydlitz* and *Derfflinger* were also badly hit. The result of the fight was to impose the greatest caution on the Ger.

Bridge to Chelsea. Money was left to continue the prize, and the race is still held annually under modified conditions. A list of the winners has been kept since 1791.

Dogma (from Gk *dokein*, to seem good or true), a term now chiefly used in theology. The D. of a Gk assembly was merely its decree, or that which seemed right and proper. Originally an opinion stated as a positive assertion, it came to mean a belief derived from authority, and especially doctrines of the Church. From meaning the essential doctrines of Christianity as contained in the Scriptures or writings of the fathers, it developed the popular sense in English of 'assertion without proof.' On the Continent (Ger. *Dogmen*) it means 'doctrine,' with no censure implied, the science of D. having a separate professorship in the Protestant univs. of Germany. See C. G. A. Har-nack, *History of Dogma* (trans.), 1895-6; R. Seeberg, *Lehrbuch der Dogmengeschichte*, 1895-1920; J. Tixeront, *Histoire des dogmes*, 1912-14.

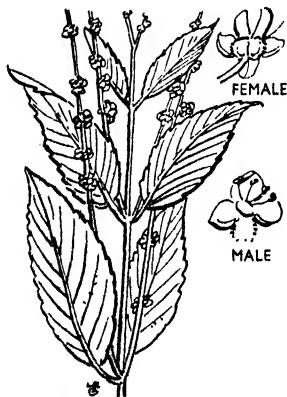
Dogmatic Theology, the systematic statement of religious (and generally Christian) doctrine, considering each article of faith in connection with others

with which it is in apparent relation. It deals, that is to say, with the actual deposit of faith, and not with its relation to, and effect on, the life of the believer. Neither does it deal with doctrine from the point of view of hist. and development. The term did not come into general use until the 17th cent. Protestant divines used to call D. T. *Theistic Theology* and *Positive Theology*. The earliest period of Christian doctrinal statement, almost entirely apologetic, may be said to end with Origen, who sketched out the main plan of the science. In the 7th cent. D. T. was brought to the highest level it has attained among the Greeks by John Damascene, but in the Middle Ages it developed greatly in the W. Important W. names are those of Augustine, Anselm, Duns Scotus, and Thomas Aquinas. The Reformation produced many vols. of Protestant D. T., notably the work of Calvin, but thereafter Protestants showed themselves averse from D. T. until it was revived by the writings of Schweitzer and Karl Barth (q.v.). In the Anglican Church, with its deliberate comprehensiveness and tolerance of divergent opinions, the study of theology has tended to be historical rather than dogmatic, but the Oxford Movement produced some dogmatic works, notably F. J. Hall's *Dogmatic Theology* in 10 vols., 1907-22, and C. Gore's *Reconstruction of Belief*, 1926. D. T. is most highly developed in the Rom. Catholic Church, notable exponents of it in recent times being the Jesuits Tanqueray, 1920, and Lenners, 1947, Pohle (trans. Preuss), Pesch, 1920, and G. van Noort, 1918-26. D. T. is usually divided into the following 7 Treatises or Tractates, following the Apostles' Creed: (1) Concerning Faith (*de Fide*); (2) Concerning the Unity of God (*de Deo Uno*); (3) Concerning the Trinity (*de Deo Trino*); (4) Concerning Creation (*de Deo Creatore*); (5) Concerning the Incarnation and Redemption (*de Verbo Incarnato et Redemptore et de Maria*); (6) Concerning Grace and the Sacraments (*de Deo Sanctificante*); (7) Concerning the Resurrection, Judgment, Heaven and Hell (*de Deo Remuneratore*). Cardinal Newman has proved to be one of the most formative influences in Rom. Catholic theology in recent years, with his defence of the Development of Doctrine. Prefixed to works of D. T. are usually the treatises of Fundamental Theology, concerning Revelation, the Founts of Revelation (Scripture and tradition), and its recipient (the Church). Judaism has never developed a systematic theology. 'It has always lacked the essential element for a Creedal religion, authoritative direction and definition by a supreme ecclesiastical Body. Formulations of the cardinal tenets of Judaism have carried no greater weight than that imparted by the forms and scholarship of their authors.' The 'doctrinal element never crystallised into fixed phraseology or rigid dogma' (E. G. Hirsch, 'Articles of Faith,' *Jewish Encyclopedia*). See J. H. Newman, *An Essay on the Development of Christian Doctrine*, 1845; W. G. T. Shedd.

History of Christian Doctrine, 1881; A. Lecerc (trans. by Leigh Hunt). *An Introduction to Reformed Dogmatic Theology* (1870), 1948.

Dogs, Isle of, Poplar Marshes, or Millwall, riverside dist. in the bor. of Poplar, E. London. It contains the W. India Docks. The 2 main settlements are Millwall (q.v.) on the W. side and Cubitt Tn in the SE. It is actually a peninsula; the origin of the name is not known.

Dog's Mercury (*Mercurialis perennis*), weed of the Spurge family (Euphorbiaceae), with creeping root-stock and erect unbranched stem bearing male and



DOG'S MERCURY

female flowers on separate plants. Although poisonous it was formerly used in medicine.

Dog's-tail Grass, see *CYNOSURUS CRISTATUS*.

Dog's-tooth Violet, or *Erythronium dens canis*, a species of Liliaceae which grows in a mild climate, and in Britain is often used for borders. The bulb has a toothed appearance, and the flowers are violet-coloured; hence the name of the plant.

Dogstar, see *SIRIUS*.

Dogtooth Ornament, in architecture, an ornamental moulding much used in medieval building from Late Norman to Early Decorated, and cut in projecting teeth. In later architecture the 'dog-tooth' frequently becomes a 4-leaved flower with the centre projecting, e.g. in Elgin Cathedral.

Dogwood, name given to *Cornus sanguinea*, deciduous shrub, native to Britain and Europe. Black D. is *Frangula alnus*. See *CORNUS*.

Dohnányi, Ernő (1887-), Hungarian pianist and composer, b. Pozsony, first studied in his home tn and from 1893 at the Royal Hungarian Academy of Music in Budapest. He produced a symphony in 1897 and appeared as pianist in Berlin and Vienna, visited England in 1898, and the U.S.A. in 1899. He was piano prof.

in Berlin in 1908-15, but returned to Budapest, where he became director of the Conservatory in 1919, of the Hungarian Radio in 1931, and of the High School of Music in 1934. He left Hungary for political reasons in 1948 and settled first in Argentina and then in Florida. His works include 3 operas, a ballet, choral music, 3 symphonies, and a suite in F sharp minor for orchestra, a piano and a violin concerto, *Variations on a Nursery Song* for piano and orchestra (his most popular work), chamber and piano music, and some songs.

Dohrn, Felix Anton (1840-1908), Ger. zoologist, b. Stettin. In 1870 he founded the great zoological station at Naples, which within 10 years became one of the most noted schools and laboratories of natural science in the world, and was the model for many later ones. D.'s early studies were almost entirely concerned with insects, and his later with marine invertebrates. He produced many valuable natural science works, including *Ursprung der Wirbeltiere*, 1875; *Studien zur Urgeschichte des Wirbeltierkörpers*, 1882; and *Die Pantopoden des Golfs von Neapel*, 1881.

Doiran, Battle of. One of the surprises of the First World War was the Allied offensive on the Macedonian front in Sept. 1918. The new Allied Commander-in-Chief, the Fr. Gen. d'Espèrey (q.v.), planned this attack immediately he assumed command. The Bulgarian Army occupied strong positions on the heights to the W. of Lake Doiran, from which they dominated their opponents. After a preparatory bombardment the Brit. forces attacked the 'P' Ridge on 18 Sept., whilst Gk troops attacked Doiran Hill. After severe fighting Gen. Sir George Milne, commanding the Brit. and Gk forces, gained Petite Couronne, Doiran tn, and the lower slopes of Grande Couronne. On 21 Sept., on the Vardar front, the Franco-Serbian offensive had reached the line Gradista-Boshava-Dragejil and the heights of Porta dominating the Varda, thus turning the flank of the enemy on the Brit. front and cutting his communications. This forced the Bulgarians to retreat on the Doiran front. By 22 Sept. the Bulgarians were in full retreat in great disorder on a front of 100 m. This collapse of Bulgaria exposed Turkey to attack on its W. flank and compelled it to cease offensive operations. The remaining forces of the Central Powers were now exposed to attack from the E., a factor which contributed to their decision to conclude an armistice.

Dola Sequanorum, see **DOLE**.

Dolabella, Publius Cornelius, Rom. gen. and husband of Cicero's daughter, Tullia; b. c. 70 bc, and one of the most notorious profligates of his age. Soon after the outbreak of civil war he transferred his allegiance from Pompey to Caesar, with whom he fought at Pharsalus (48), and later in Africa and Spain. On Caesar's death D. seized the consulship and sided with Brutus and his fellow conspirators. Bribed by Antony, he once again changed sides and accepted the

prov. of Syria. Having plundered the cities of Greece and Asia on his way there, he murdered Trebonius, proconsul of Asia, who had denied him admission to Smyrna. Cassius was sent to take his place, and besieged him in Laodicea. To avoid capture D. ordered one of his soldiers to kill him (43 bc).

Dolce, Lodovico (1508-68), It. author, b. Venice, where he worked for the publisher Giolito. Besides translating or paraphrasing the classics, he produced (among other original pieces) *L'Aretino*, a dialogue on painting, 1557, which has been ed. by D. Ciampoli, 1912.

Dolci (Dolce), Carlo, or Carlino (1616-1686), Florentine painter chiefly of religious subjects, pupil of Jacopo Vignali. He also painted portraits of the Imperial family at the Emperor's court. Among his best works are: 'St. Andrew praying before his Crucifixion' (Pitti Gallery), 1646; the 'St. Cecilia' (Dresden) and 'St. Veronica' (Dulwich); but a pathos near to sentimentality mars his work.

Dol-de-Bretagne, Fr. tn in dept of Ille-et-Vilaine, 14 m. from St Malo. The level, fertile dist., Marais de Dol, is protected from the sea's inundations by a dyke, 22 m. long, built in the 12th cent. D. has a fine 13th-cent. cathedral of granito, with good glass, sculptures, and 2 fine porches. In 1793 the Vendéens defeated the republicans here. Pop. 4800.

Doldrums, regions of calms or light winds, heavy rains and thunderstorms, situated in equatorial seas. They follow the sun's ann. changes of declination but to a smaller degree, being never more than 5° N. or S. of their mean positions. See **WIND**.

Dole (anc. **Dola Sequanorum**), Fr. tn. cap. of an arron., in the dept of Jura, on the Doubs and the Rhine and Rhône canal. It was known to the Romans, and was the cap. of Franche-Comté (q.v.) before being displaced by Besançon. It faces the heights of the forest of Chaux, on a vine-clad slope. There are many fine public buildings, and some old houses in the style of the Sp. Renaissance. Pasteur (q.v.) was b. here. There are iron and copper foundries, and machines and chemicals are manuf. Pop. 18,250.

Dole: 1. A colloquial rather than official term which came into general use in Great Britain during the years that followed the end of the First World War. It denoted the out-of-work donation paid to ex-service workers from 1919. This allowance varied from 20s. to 29s. for men and from 15s. to 25s. for women. In 1920 the difficulty and cost of having 2 separate systems of allowances for unemployment in operation side by side led to a new Act, which repealed all previous legislation and placed all unemployed persons on the same level. See also **NATIONAL INSURANCE**.

2. In Scots Criminal Law, means a corrupt and evil intention proved or assumed to exist. It is assumed in 'such circumstances as indicate a corrupt and malignant disposition, a heart contemptuous of order and regardless of social duty.'

Dolerite, coarse-grained basaltic rock used for road mending and kerbstones. It consists of augite and plagioclase feldspar with the addition of olivine in some varieties, and of quartz in others. Variable quantities of hornblende, apatite, and biotite are often present.

Dolet, Etienne (1509-46), Fr. Renaissance scholar, b. Orleans; set up a printing press in 1542, and was sev. times arrested for publishing heretical works. In 1544 he was imprisoned for heresy; burned in the Place Maubert, 1546. *See* life by Chassaingne, 1931.

Dolgelley, urb. dist. and co. tn of Merioneth, N. Wales. It is situated at the base of Cader Idris, on the Afon Wnion, 230 m. from London. In the neighbourhood is the Parliament House, in which it is said Owen Glendower held a parliament in 1404. *Dolgelley beds* are a series of rocks of the Upper Cambrian system wall exposed near D. and Blaenau Ffestiniog and consisting of slates and shales containing characteristic trilobites. Pop. 2508.

Doll, figure in the shape of a human being, used as a child's toy. Various derivations have been suggested of which 'idol' is the most probable. Others are Norse *dauð*, woman, and the name 'Dorothy.' D.s date from very ancient times, and were common in Egypt, Greece, and Rome. Early primitive people delighted in rude images carved out of wood or bone. To the Negro a D. has a magical significance, and may be regarded variously as a mascot, a votive offering, or an idol. Wooden D.s were introduced into England from the Netherlands, and were called Flanders babies, or simply 'children's babies.' Since then the manuf. of D.s has greatly advanced, and the stiff wooden D. has been superseded by the stuffed sawdust D., with composition or wax head. Its features became more and more realistic. Hair was substituted for painted ringlets, joints were made, and wire mechanism introduced so that the D. could be made to close its eyes and utter sounds. *See* Lesley Gordon, *A Pageant of Dolls*, 1948.

Dollar, burgh in Clackmannanshire, Scotland, 6 m. N.E. of Alloa. It has an academy, founded in 1818, and endowed by Capt. John McNab (1732-1802). An object of interest is the ruin of Castle Campbell. Pop. 1500.

Dollar (derived from the Ger. *thaler*), applied especially to the unit of the monetary system of the U.S.A. and Canada. It was brought into common use in the U.S.A. about 1794. The Act of 1837 estab. the silver coin containing 371.25 grains of silver, 41.25 of alloy, total weight being 412.5 grains. Before that time the weight was 416 grains. Under the Act of 1873 trade D.s of 420 grains (378 grains silver, 42 alloy) were coined for the purpose of export to China and other Asiatic regions, not legal tender at home. There are paper as well as silver D.s. The D. mark \$ is written before the number, a sign whose derivation is much disputed. A D. (approximately 7s.) contains 100 cents. Silver

half and quarter D.s, and dimes (10 cents), are issued; also 'nickel' 5-cent pieces and bronze cents. A gold coin of similar value (25.8 grains in weight—23.22 grains of gold, 2.58 of alloy) was used from 1849 to 1889. Though declared the standard of value in U.S.A. in 1900, gold coinage has been prohibited by the Gold Reserve Act of 30 Jan. 1934, and silver D.s have been minted only irregularly. The Brit. double florin (first struck 1887, now obsolete) about equalled a D. By 1600 the word was common in England for the Ger. thaler, a silver coin of varying value current from the 16th cent., and was especially used later for that worth 3 marks (2s. 11d.). It is sometimes used roughly as a slang term for crown (5s.). The par values of the currencies of member nations of the International Monetary Fund have been announced, since 1946, in terms of gold as a common denominator or in terms of the U.S. D. of the weight and fineness in effect on 1 July 1944. *See also* METROLOGY.

Dollar Diplomacy, in Amer. politics, a term specially associated with the Taft administration, 1908-13. It means a systematic effort by the State Dept to help Amer. cap. to flow into areas abroad which it would not otherwise enter. Taft and his secretary of state, Philander C. Knox, pursued the D. D. most actively in the Far E., their chief motive being to promote trade and safe cap. investment, and a minor motive being to strengthen Chinese political integrity. In Theodore Roosevelt's administration the Amer. consul-general at Mukden, apprehensive of Jap. penetration, came to the conclusion that if America put more money into the Far E. she could more easily maintain the policy of the Open Door. The economic motive was also dominant in the application of D. D. to Central America, though a political purpose, the safeguarding of the Panama canal route, was also served. Knox thought that if Amer. cap. flowed into Nicaragua and Honduras through Amer. bankers, traders, and railroad builders that would offset any possibility of European interference on the plea of economic depression and financial instability. When Woodrow Wilson became president (1913) he explicitly repudiated D. D. He himself, however, maintained it both in China and Nicaragua, co-operating with the bankers; but it has been generally condemned from his time, and since the First World War is no more than a memory. *Consult* A. Nevins, *America in World Affairs*, 1942.

Dollfuss, Engelbert (1892-1934), Austrian statesman, b. Teting. He studied law at Vienna Univ., served with distinction in the First World War, and, entering politics, soon became leader of the Christian Socialists. In 1932 he became chancellor, and set himself to restore Austrian economic stability. Though opposed to the Nazis, D. used methods not dissimilar from theirs in his campaign against the social democrats, accepting help from Starheimberg's *Heimwehr*. There was an unsuccessful Socialist

attempt on his life in 1833, and an unsuccessful Socialist revolution early in 1834, after which representative gov. in Austria was abolished by D. and a type of 'corporate state' estab. In July 1834, however, D. was assassinated by the Nazis in the chancellery in Vienna.

Döllinger, Johann Joseph Ignaz von (1799-1890), Ger. Catholic theologian, b. Bamberg, Bavaria. He was educ. at the gymnasium and univ. at Würzburg, and in 1822 was ordained priest. After lecturing for 3 years in the Lyceum at Aschaffenburg (1823-6), D. was appointed to the chair of eccl. hist. and law at Munich. It has generally been assumed that during the early part of his career he was an ardent champion of Ultramontanism in Germany, though even as a young man his views were by no means narrow. He was a friend of the leaders of the Oxford Tractarian movement—Pusey, Hope Scott, Manning, and others—and wrote vehemently against Protestantism in *Die Reformation*, 1846, and *Luther*, 1851. His visit to Rome, 1857, worked a great alteration in his opinions. In 1861 he delivered certain lectures at Munich in which he declared his belief that the progress of the Rom. Catholic Church did not depend on the temporal sovereignty of the Pope. He answered his assailants in *Kirche und Kirchen*, 1861, and *Die Papsttätigkeit des Mittelalters*, 1863. In 1864 Pius IX issued his *Syllabus* condemning certain current philosophic systems, which was replied to anonymously by the pub. of *Janus*, written by D. in collaboration with Huber and Friedrich. When in 1870 the Vatican Council defined the doctrine of papal infallibility, D. headed a protest, and in 1871 addressed his famous letter to the Archbishop of Munich, in which he refused to accept the doctrine. He was excommunicated, but sev. of the leading univs. of Europe expressed themselves in his favour by conferring on him honorary degrees. During the latter years of his life he endeavoured to bring about a union of the Christian Churches which do not belong to the Rom. Communion. He was elected a president of the Munich Academy in 1873. His later pub. include *Quellenwerk zur Geschichte des Konzils von Trient*, 1876; and *Studies in European History* (Eng. trans.), 1890. See Lord Acton, 'Döllinger's Historical Work' (in *Eng. Historical Review*, vol. v), 1890; and life by J. Friedrich, 1899-1901.

Dollman, John Charles (1851-1934), painter. His most famous pictures are 'The Hunter,' 1911, and a much earlier one, 'Les Misérables,' 1886, which is now in the London Museum. His 'A Very Gallant Gentleman,' 1914, a memorial to Capt. Oates who perished with Scott in the Antarctic, is in the Cavalry Club. D. had pictures in the Royal Academy almost without a break for 60 years.

Dollond, John (1706-61), London optician, b. Spitalfields, by trade a silk weaver. He studied mathematics, astronomy, and optics, and was also a good linguist. In 1752 he became a practical optician in partnership with his son,

Peter, founding the well-known firm of Dollond & Co., Ltd in St Paul's Churchyard. In 1758 his treatise on the dispersion of light, pub. in *Philosophical Transactions*, won him the Copley medal from the Royal Society. Its result was his invention of the achromatic telescope. He also invented the heliometer (q.v.), and in 1761 was elected F.R.S.

Dolman (Turkish *dolman*), originally a long, loose garment with narrow sleeves. It was worn usually by the Turks, and was the name of the uniform jacket worn by hussars. In the second half of the 19th cent. a close-fitting jacket called a D., which had sleeves cut in one piece with the back, came into fashion for ladies' wear.

Dolmen, a word of uncertain though perhaps Cornish derivation, which was at



W. F. Mansell

DOLMEN DE MANÉ KERIONEK, BRITTANY

one time more widely used than at present in antiquarian circles to denote a megalithic structure consisting of 3 or more large uprights capped by a horizontal stone. The term is still commonly used in Ireland, where there are very many examples. Many occur also in Wales and Cornwall and in France; current archaeological opinion regards them as the burial chambers of chambered-tombs and passage-graves of the Neolithic period, revealed by the denudation of the covering grave-mound.

Dolmetsch, Arnold (1858-1940), Fr. expert on old musical instruments and their music; b. Le Mans. Studied violin under Vieuxtemps in Brussels and at the Royal College of Music, London. Collected and repaired old instruments and learned to play them. He was at Chickering factory, Boston, U.S.A., 1902-9, and later had a dept in Gaveau factory, Paris, 1911-1914, where he made clavichords and harpsichords; returned to England, 1914, and equipped a workshop at Haslemere, Surrey, where he arranged periodical festivals of old music. He made, and revived the playing of, most instruments of the 15th to the 18th cents. Supporting these activities was a 'Dolmetsch Foundation.' Pub.: *Select English Songs and*

Dialogues of Sixteenth and Seventeenth Centuries, 1912; *The Interpretation of the Music of the Seventeenth and Eighteenth Centuries*, 1915, new ed. 1944. His third wife, Mabel D. (b. 1874), and all his children, including the sons Rudolph (1906-42) and Carl (b. 1911), followed him in his enterprise.

Dolo, It. tn in Veneto (q.v.), on the Brenta (q.v.), 13 m. W. of Venice. Pop. 8000.

Dolomieu, **Déodat Guy Sylvain-Tancredé Gratet de** (1750-1801), a famous geologist and mineralogist of Dolomieu, Isère, France. Early a member of the Order of Malta, he killed a knight of his gallej in a duel (1768), but the death-sentence was revoked by the grand master, and 9 months' imprisonment substituted. D. soon left the army to study science. In 1783 he pub. *Voyage aux îles de Lipari*; in 1784 studies on earthquakes; and in 1785 appeared memoirs on basalt and the mineral 'dolomite' (named after him, 1791). He became prof. of geology at the School of Mines, 1796, and Daubenton's successor at the Natural Hist. Museum, 1800. In 1798 D. was on the scientific staff which accompanied Bonaparte's expedition to Egypt. Returning for health reasons, 1799, he was imprisoned at Taranto, and only released after the battle of Marengo, 1801. Other works are *Mémoires sur les îles Ponces*, 1788; *Dernier voyage dans les Alpes*, 1802; *Philosophie minéralogique*, 1802 (partly written in prison).

Dolomite, common mineral crystallising in rhombohedra and consisting of carbonates of calcium and magnesium. It has a hardness of $3\frac{1}{2}$ to 4, and a sp. gr. of 2.8, and is therefore harder and heavier than calcite. The crystals are usually white in colour, and have curved faces, some varieties being almost spherical. The term D. is also applied to rocks containing that mineral. Such rocks are common to every geological formation both in the Old World and in the New. They seldom contain fossils and are often found in the neighbourhood of rock salt and gypsum. Many of the D. rocks of Britain are esteemed as building stone. The Houses of Parliament were built with D. from Bolsover, in Derbyshire; other localities are Notts (Mansfield stone) and Durham. D.s are common in the Alps, and a dist. in the S. Tyrolean Alps, much favoured by tourists, is known by that name.

Dolomites, **The**, mountainous dist. in the S. Tyrolean Alps, N. Italy. It is chiefly composed of magnesian limestone, where the peaks rise in most fantastic forms and shapes, and are streaked by veins of wonderful vivid colourings. The highest peak is the Marmolata, 10,972 ft., but other much more typical peaks are the Sorapiss, the Cimón della Pala, the Langkogel, the Pelmo, Drei Zinnen, and Rosengarten.

Dolon-Nor, or **Lama-Miao**, tn of Inner Mongolia. It is situated 165 m. N. of Peking, and is noted for the manuf. of brass and iron idols, vases, bells, etc. It is a centre of trade for E. Mongolia.

There are numerous ruins and Buddhist temples in the neighbourhood. Pop. 30,000.

Dolores: 1. City, cap. of D. dist., Buenos Aires prov., Argentina. 127 m. from Buenos Aires city. D. is an agric. centre, with dairying and other industries. Pop. 14,400.

2. City of Seriano dept, Uruguay, a riv. port on San Salvador R., shipping grain. Pop. 11,500.

3. Or **D. Hidalgo**, city of Guanajuato state, Mexico, on the central Mexican plateau at an altitude of 6230 ft. chiefly occupied in agriculture and pottery-making. It is famous for the call to arms (*Frito de Dolores*) by which M. Hidalgo started the liberation of Mexico on 16 Sept. 1810, the day still celebrated as independence day. Pop. 6000.

Dolphin, popular name of various species of toothed cetaceans of the Delphinidae, which family also includes the porpoises. D.s are distinguished from the latter in that the snout is beaked. In fact D.s comprise all members of the Delphinidae except the porpoises and the larger species, such as the killer and the beluga. Among the numerous species of D.s there are: the common D., *Delphinus delphis*, found in schools over much of the temperate and tropical ocean; Risso's D., *Grampus griscus*; riv. D.s such as the Irrawadi D., *Orcella brevirostris*, and the Amazonian D., *Inia geoffrensis*; and the bottle-nosed D., *Tursiops truncatus*. D.s feed mainly on squid and fishes and most are active creatures capable of good turns of speed. Recent studies have shown that certain D.s emit a wide range of sounds, some in the supersonic register. There are also fishes known as D.s, these being of the species *Coryphaena hippurus*, a beautiful oceanic fish which preys on flying-fishes.

Dolphin, **The**, see DELPHINUS.

Dom, 14,942 ft., the highest mt entirely in Swiss ter. It rises between the valleys of Saas and Zermatt, in the canton of Valais. First ascent by the Rev. J. L. Davies in 1858.

Domagk, **Gerhard**, (1895-) Ger. chemist, b. Lagow, Brandenburg, attached to the Bayer Company at Elberfeld. He introduced into medicine Prontosil (1935), the first drug containing sulphanilamide, Thiosenicarbazone (for treatment of tuberculosis) and other drugs. His results are due to an extension of the method developed by Ehrlich (q.v.), but he tried the effects of a series of dyes on bacteria in the body, irrespective of their effects on bacteria outside the body. Awarded Nobel prize for medicine in 1939.

Domat, or **Daumat**, **Jean** (1625-96), Fr. jurist, was the author of *Lois civiles dans leur ordre naturel*, 1689, and *Le droit public*, 1697. This work, which earned for D. a pension of £2000 from Louis XIV, is still regarded as a valuable and authoritative treatise on the science of law, all law being considered a development from principles of ethics. When Pascal died D. took care of his private manuscripts.

Domažlice (Ger. **Taus**), Czechoslovak tn in the region of Plzeň (q.v.). It has an

engineering industry. In this dist. in medieval times lived the Dogs' Heads, whose task it was to guard the passes through the W. Forest of Bohemia (q.v.). Pop. 7300.

Dombasle, Fr. tn in the dept of Meurthe-et-Moselle. It is important for the production of soda and its derivatives. Pop. 8300.

Dombes, dist. in France, formerly part of Burgundy, now in the dept of Ain. It was very swampy, but has been extensively drained. The cap. was Trévoux.

Dombrowski, Jan Henryk (1755-1818), Polish patriot and general, b. Pierszowice, Cracow. From 1792 to 1794 he took part in the Polish campaigns against Russia and Prussia, gaining distinction during the siege of Warsaw under Kosciuszko. In the 1st campaign he was conspicuous for his bravery at the Trebbia (1799). With the div. of Poles he had organised for Napoleon in 1806 he commanded in the Polish campaign of 1809, and during the fatal march on Moscow in 1812 was wounded whilst crossing the Beresina. For his reorganisation of the Polish forces he was appointed cavalry-general in the new kingdom of Poland (1815).

Dome, a convex roof, of approximately hemispherical form, over a square, octagonal, or circular space in a building. D.s may be constructed of stone, brick, concrete, reinforced concrete, hollow tiles, timber, steel, or aluminium framing; and may be covered externally with lead, copper, etc. For ideal visual effect, a hemispherical D. is satisfactory internally, but needs to be steeper than a hemisphere externally, or it appears insignificant. Hence, certain D.s are of double (e.g. St Peter's, Rome (fig., C, p. 450)) or even of triple construction (e.g. St Paul's, London (fig., D)), where the heavy stone lantern is carried by a brick cone, entirely concealed between the outer and inner D.s, the former being of timber framing covered with lead, and the latter of brickwork 18 in. thick). D.s were used by the Assyrians many centuries BC, but the first important historical example is the Pantheon at Rome, c. AD 112, of brick and concrete, 142 ft 6 in. in diameter (fig., A). The famous Byzantine D. of St Sophia at Istanbul, AD 537-552, is of brick, 107 ft in diameter (fig., B).

In Islamic architecture (q.v.), and in India both before and after the Muslim conquest, D.s were largely used for mosques and tombs. Though seldom found in Romanesque or Gothic architecture, the use of the D. was reintroduced after the Renaissance. Famous examples are Brunelleschi's steep D. (1420-34) at Florence Cathedral; Bramante's beautiful little *tempietto* (1502-10) adjoining St Pietro in Montorio at Rome; and 4 buildings at Paris—the Sorbonne (1635-1649), 40 ft diameter; the Val-de-Grâce (1645-50), 56 ft diameter; the Invalides (1706), 91 ft diameter; and the Pantheon (1757-90), 69 ft diameter. Among more modern examples are the D. over the Brit. Museum Reading Room, London (1857), 140 ft diameter; the extraordinary stone D. over the church at Musta in

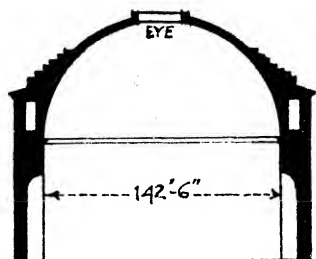
Malta (1864), 118 ft diameter; and the aluminium 'Dome of Discovery' at the 1951 Exhibition in London, 365 ft diameter, demolished in 1953.

Dome of the Rock, see OMAR, MOSQUE.

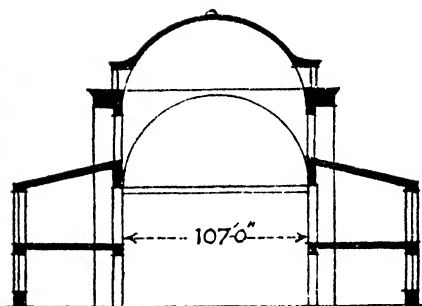
Domenichino, Domenico Zampieri (1581-1641). It. painter of the Bolognese school, pupil of Calvaert and the Carracci. A friend of Albani, he visited with him Parma, Modena, and Reggio to study Correggio and Parmigiano, later joining him at Rome. Cardinal Agucchi was his first patron, and employed him in his palace. D. helped Annibale Carracci at the Farnese, and painted 'The Death of Adonis' from his own designs. He painted frescoes for Cardinals Borghese, Farnese, and Aldobrandini. He should be judged chiefly by his frescoes, and undoubtedly stands high among It. painters. Some of the best are the series at the Basilian Abbey of Grottaferrata. His famous oil painting, 'The Last Communion of St Jerome,' was judged by Poussin next best in Rome to Raphael's 'The Transfiguration.' In 1617 he returned to Bologna disgusted by the jealousy of rivals, but was in Rome again in 1621. In 1630 he went to Naples to decorate the Capella del Tesoro. His fame roused much envy among the estab. painters there, and it was suspected that he was poisoned. Among his works are: 'The Flagellation of St Andrew,' 1608; frescoes of the lives of St Nilus and St Bartholomew, 1609-10; frescoes of St Cecilia (St Luigi de' Francesi, Rome); 'The Four Evangelists' (St Andrea della Valle); 'Diana and her Nymphs'; 'The Sybil of Cumae' (Borghese Palace); 'The Repose of Venus'; 'Diana and Actaeon' (Pitti, Florence); 'The Angel and Tobias,' 'St George and the Dragon' (landscapes, National Gallery, London); 'Moses and the Burning Bush,' 'Combat of Hercules and Achelous,' 'The Triumph of Love' (Louvre); 'St John in a Vision'; 'Time Trampling on Youth.' His portrait of Cardinal Colonna was highly praised. See C. P. Landon, *Works of Domenichino, with a memoir*, 1823; and life by L. Serra, 1921.

Domenico, Veneziano (d. 1461). It. painter, b. in the early part of the 15th cent. His works have scarcely anything in common with the Venetian school, though he signs himself a Venetian. He worked on the decorations of the Portinari Chapel in Santa Maria Novella, Florence, 1439-44, and is said to have used linseed oil as his medium. His paintings include an enthroned Virgin and Child with St John the Baptist, St Francis, and other saints. He d. at Florence sev. years after the death of Andrea del Castagno, whom Vasari erroneously accuses of having been his murderer. But few of his paintings are in existence, one of the most important being the enthroned Madonna in the National Gallery. His prin. surviving work is an altar-piece in the Uffizi.

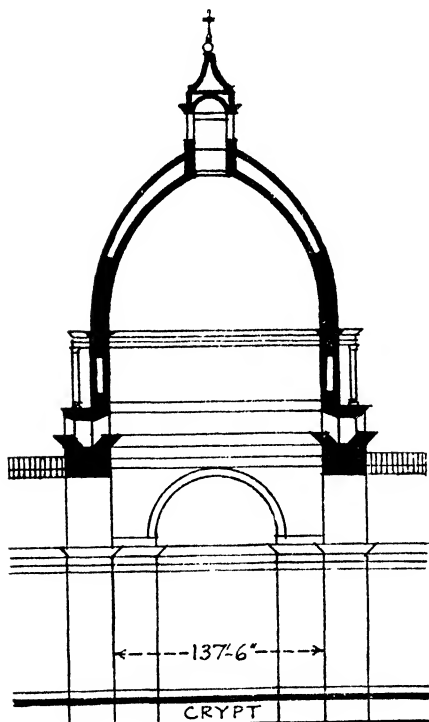
Domesday, or Doomsday, Book, survey of England made by William the Conqueror (q.v.) in 1085-6. The returns which came in from all over the country were probably compiled in the existing MS. of



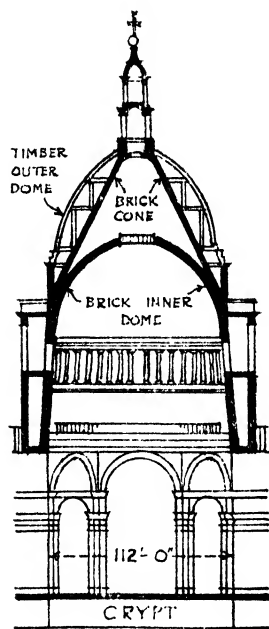
A



B



C



D

COMPARATIVE SECTIONS OF FOUR FAMOUS DOMES

A The Pantheon Rome; B, St Sophia, Istanbul; C, St Peter's, Rome;
D, St Paul's, London.

2 vols. (now in the Public Record Office) between 1088 and 1100. D. B. gives details of land-ownership, of the type of cultivation, of the number of inhab. on the various estates and of their respective classes, etc., both at the actual date of the survey and with references to the conditions prevailing in 1066. The material is arranged so as to present clearly the way in which the land was divided amongst the various barons. It is an amazing compilation, both in the wide scope and in the intimate detail of its information. The method of obtaining the information was notable in that it made great use of the jury. The prin. object of the survey was

home nursing, the management of household expenditure and income, and sometimes also of child care and gardening. Degree courses are taken at London (Queen Elizabeth College, q.v.) and Bristol. Training colleges which specialise in D. E. are as follows: the 3 London colleges, at Battersea, Berridge House, and Buckingham Palace Road; and the colleges at Bangor, Bath, Cardiff, Clacton-on-Sea, Eastbourne, Gloucester, Ilkley, Leeds, Leicester, Liverpool, Manchester, Newcastle-upon-Tyne, Shrewsbury, Stafford, Totley, and Worcester. There are colleges in Scotland at Aberdeen, Edinburgh, and Glasgow, and in N. Ireland at

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AN EXCERPT FROM THE DOMESDAY BOOK

at one time thought to be fiscal; to make possible a sounder system of taxation. It was also clearly of value in settling outstanding pleas, for the commissioners had the authority of royal justices. But probably William was most interested in finding out as much as possible about his kingdom, and it is for the picture which it gives of conditions in England in 1066 and 1088 that D. B. is so highly valued by the historian. It is a unique medieval document. See J. H. Round, *Feudal England*, 1895; F. W. Maitland, *Domesday Book and Beyond*, 1897; A. Ballard, *The Domesday Inquest*, 1906; F. M. Stenton, *English Feudalism 1066-1166*, 1932, and *Anglo-Saxon England*, 1943.

Domestic Economy (from Gk *oikos*, house, and *nomos*, to manage) is the only expression in which 'economy' bears its original meaning of house management. To-day it is used both of the thrifty control of the home from a financial point of view and more generally of the science which teaches household duties and control. This science has, in recent years, assumed a prominent place in the education schemes of girls' schools, training colleges, and in some univs. for women students. D. E. treats of the study of food values and preparation, nutrition and physiology, personal hygiene, ventilation, sanitation, house cleaning, laundering, needlework,

Belfast. Among schools providing specialised training are Winkfield Place, Windsor, and the Cordon Bleu Cookery School, London. See **COOKERY**; **HOMEMAKING**; and subsidiary articles.

Domestic Science, see **DOMESTIC ECONOMY**.

Domestic Servants are those employed to perform the work of a household. The majority of them are women, though page boys, footmen, and butlers, etc. are indispensable in all large estates. D. S. are included in the Employers' Liability Act, and under the National Insurance (Industrial Injuries) Act, 1946 (replacing the Workmen's Compensation Act, 1925) (see **WORKMEN'S COMPENSATION**), can claim compensation for injuries arising during their employment, provided that gross negligence or other wilful misconduct on their part has not caused the injury. All D. S. must insure against sickness under the National Insurance Acts, the conditions being the same for them as for other workers. Statistics show a decrease in the number of D. S. proportionate to the population. The census returns of 1921 showed that 371,682 men-servants were employed throughout Great Britain in that year, and 1,844,574 women, giving a total of 2,216,256. In the financial year 1936-7 the number of licences taken out for male servants was only 173,822. There

are no up-to-date statistics of female D. S., but the total to-day is far below the total for 1931. A gov. scheme (the National Institute of Houseworkers), introduced by the Labour Gov. in 1947, had for its primary object the raising of the prestige of domestic work by giving it the status of a skilled craft, and consequently attracting more workers. It estab. a diploma for skilled domestic workers who qualify at the end of a 6 months' training course, and for other domestic workers able to satisfy an examining board. The Institute cannot enforce standards of conditions and wages, but prescribes rates of wages and conditions to which employers of holders of diplomas are expected to conform. 'Resident workers' of the Institute have a working week of 48 hours and 'non-resident workers' one of 44 hours, spread over a 7-day week. Employees are entitled to one full day and one half day off each week, but there may be mutual agreement for 3 half days instead. Workers have a fortnight's holiday with pay each year for the first 5 years after obtaining the diploma, and 3 weeks a year afterwards.

The Local Health Authority is empowered to arrange for domestic help (under the National Health Service Act, 1946, section 29) in households where such help is necessary owing to illness, and for this some payment may be asked.

Domestication of Animals, process by which man has changed certain species of animals to suit his own needs. This change can only be rendered effective if carried on for successive generations, as the term domestication implies permanent changes in certain characteristics, and also in many cases in the structure, these changes being brought about by alteration of the animals' environment and the introduction of a system of breeding. D. of A. includes also the protection and provision of food for some animals and the special control exercised over them which prevents their leading an absolutely wild life. It is necessary in the case of the animals that they should be able and willing to adapt themselves to this control, and that they should be fertile, though under control or living under different conditions. The process by which domestication is produced consists principally in selecting certain species which possess the most desirable qualities and in causing them to breed only with other desirable species, at the same time, in all probability, altering their food and surroundings. This leads to changes in outward form, in some cases not very noticeable, in others very marked, as the difference in feathers, hair, colouring, and, deeper-seated still, changes in structure. Among domestic animals there may be mentioned a number of birds, as fowls, ducks, geese, and many others. Dogs, cats, and sev. other mammals are also domesticated. Certain kinds of insects and fishes, too, have certainly been altered by man, if they cannot lay claim to the title of domesticated animals. See C. Darwin, *The Variation of Animals and Plants under Domestication*, 1868; and

N. S. Sclater, *Domesticated Animals, their Relation to Man and his Advancement in Civilisation*, 1896.

Domett, Sir William (1754-1828), adm., b. Devonshire. He was present in the fight off Ushant (1778), in the *Chesapeake* under Arbuthnot (1781), and in the battle of the Saints (1782). On the glorious first of June (1794) he commanded the flagship *Queen Charlotte*, and in 1795 he was present in the action off L'Orient. Four years later he fought in Basque road, and at Copenhagen he served as flag-capt. under Sir Hyde Parker (1801).

Domfront, Fr. tn in the dept of Orne. It owes its origin to a 6th-cent. hermit, St Front. It has a 11th-cent. church, and the remains of an ancient castle and the tn ramparts. The tn is built on a rocky crest and is dominated by the fine modern church of St Julien. Pop. 2600.

Domicile, in Eng. law, is the country in which a person is deemed to have his permanent home. It is possible for a person to be domiciled in England but to be resident in Nigeria (e.g. a member of the colonial service). D.s may be of sev. types: D. of origin; D. of dependence; D. of choice. The D. of the father is the D. of the child and the latter changes with the D. of the father during minority. An illegitimate child takes the D. of the mother. Should the father die during the minority of a child, the child's D. is the last D. of the father. A woman when she marries takes the D. of her husband (D. of dependence). A male or an unmarried female over 21 may acquire a new D. by manifesting an intention of adopting the country of that D. as his or her permanent home (D. of choice) and of abandoning the D. of origin. If a person dies after abandoning his D. of choice but before acquiring a fresh D., his D. of origin revives.

D. is of practical importance in disposition of property by will and in the administration of intestacies. The administration of personal estate is governed by the law of the country in which the intestate died domiciled. The devolution of real property on the other hand is governed by the law of the place where the land is situate (*lex situs*). In matters affecting status (e.g. divorce) the Eng. courts will only recognise decrees which are valid according to the law of D.

Dominance, in biology, connotes the fact that when an offspring receives the genes of 2 contrasting characters from its parents, in many cases one of those characters, the dominant, will develop to the exclusion of the other, instead of combining with it. The repressed character—the recessive—may, however, reappear in the next generation; thus, a hybrid between pure-bred horned and hornless (dominant) cattle produces offspring which are all hornless; but if these were mated some horned animals might be found among their descendants. See HEREDITY.

Dominic, St (Dominic de Guzman) (1170-1221), b. Caleruega, a small tn in the diocese of Osma in Old Castile, Spain. As a young priest he resigned a canonry to

take up missionary work among the Albigenses in the S. of France. In 1215 he founded his order of mendicant friars, adding to the Rule of St Augustine his own constitutions. Pope Honorius III recognised and sanctioned the order in 1216. The régime of the order was most severe, enjoining silence, poverty, and fasting. The friars were called Dominicans from their founder; Preaching Friars from their zeal in persuasion; Black Friars from the colour of their dress; and in France Jacobins, from their original H.Q. in the Rue St Jacques at Paris. For women desirous of following the same Rule the 'Second Order' was formed; and a confraternity of men and women in the world but governing their lives by the same principles was called the 'Third Order.' The order numbered some famous theologians, including Thomas Aquinas. The Dominican Order have always upheld Aquinas's theological system (Thomism), and on some matters have taken part in acrimonious disputes with theologians of other schools, notably the Jesuits. The Order furnished examining judges and often the presidents of the Sp., Rom., and Portuguese Inquisitions. St Dominic was canonised by Pope Gregory IX in 1235; his feast day is 4 Aug. See A. Jessopp, *The Coming of the Friars*, 1889; J. Herkless, *Francis and Dominic*, 1901; and B. Jarrett, *Life of St Dominic*, 1934.

Dominica, largest of the Windward Is., Brit. W. Indies, is 29 m. long and 15 m. broad; area 305 sq. m., of volcanic formation and very mountainous, with a healthy climate and a rainfall of 80 in. in parts and over 250 in. in others. Sugar has ceased to be an article of export, and the main exports are now of bananas and of lime juice and lime oil. Copra, cacao, vanilla, and grapefruit are also exported. There are about 100 pure Caribs still living on the is. D. owes its name to the fact that it was discovered by Columbus on a Sunday (Sp. *Domingo*), 3 Nov. 1493. The is. was included in a grant by Charles I to the earl of Carlisle, but as all attempts to subdue the aboriginal Caribs failed, it was agreed in 1748 by the treaty of Aix-la-Chapelle that D. and other W. Indian is. should be neutral and the Caribs left in possession. But the Fr. ignored this arrangement and estab. plantations in the is., after which England captured it in 1759; and by the peace of Paris, 1763, it was assigned to England. In 1778 the Fr. under the Marquis de Bouillé invaded it and marched into Roseau; but though many Brit. W. Indian is. fell into Fr. hands at this time Rodney, at the Battle of Saints, saved the situation, and D., with various other is., was restored to England by the Treaty of Versailles, 1783. The Fr. republican, Victor Hugues, however, invaded D. with a force from Guadeloupe in 1795, but was repelled. Then later, in 1805, Gen. La Grange captured Roseau once more but was unable to reduce the colony, and, after extorting a payment of £12,000 from the people and vainly calling on the Eng. governor to surrender, sailed to Guadeloupe. The Eng. gover-

nor, Gen. Prevost, was duly rewarded by the Dominican House of Assembly for his gallantry and on his return to England was created a baronet. Until 1940 D. was a part of the Leeward Is. group but in that year became a separate colony under the governor of the Windward Is. A legislative council was created in 1893 when the assembly was abrogated and Crown Colony gov. estab., but in 1925 the elective principle was reintroduced. Since 1956 there have been 3 ministers in the executive council. Pop. 59,000. Roseau (12,000) is the cap.

Dominical Letter, the letter used to denote the Sundays throughout 1 year. The 7 letters, A B C D E F G, are used in succession to denote the 1st 7 days of the year, from 1 to 7 Jan., and then in rotation the next 7 days, and so on. Thus, if 3 Jan. be a Sunday, which occurred in 1954, it is evident that the D. L. for the year is C, as the number of letters and of the days of the week is the same. (The *Nautical Almanac* gives the D. L. each year on p. 1, and shows that C was the D. L. for that year.) Leap year has 2 D. L.s. 1 for the days preceding 29 Feb. and the other for the rest of the year. The intercalary day is marked by the same letter as the day preceding it, thus effecting the change on the following Sunday. D. L.s displaced the nundinal letters in the Rom. calendar; rules and tables for finding them are given in prayer books.

Dominican Order, see DOMINIC, ST.

Dominican Republic, also known as **Santo Domingo**, W. Indian rep., formerly the Sp. portion of the is. of Santo Domingo (q.v.) or Hispaniola. It occupies the E. or larger part of the is., of which Haiti is the W. part. Its area is 18,700 sq. m., with 1000 m. of coast-line; the pop. was estimated at 2,400,000 in 1955. There are 18 provs., and the chief tns are Ciudad Trujillo (formerly Santo Domingo), Santiago de los Caballeros, San Pedro de Macoris, San Francisco de Macoris, and Puerto Plata. The chief crops are sugar and cocoa; coffee and tobacco are also grown in quantities; and among other products are mahogany and other furniture hardwoods, cotton, lignum vitae, honey, logwood, turtleshell, etc. In 1946 imports were valued at 27,880,000 gold pesos and exports at 64,792,000. The gold peso equals the U.S. dollar. In 1954 the figures had risen to 82,800,000 and 119,700,000 gold pesos respectively. There are 260 m. of publicly owned railways. There is cable communication with N. and S. America, New York, Puerto Rico, and Cuba. The rep. is governed under a constitution proclaimed on 10 Jan. 1947. Congress is composed of a senate of 19 members (1 from each prov. and the dist. of Santo Domingo) chosen by direct popular vote, and a chamber of 45 deputies, both houses being chosen for 5 years, as is the president. Héctor B. Trujillo Molina was elected in 1952. The judicial power is vested in the supreme court, courts of appeal, courts of first instance, communal courts, and other tribunals set up by

special laws such as the land courts. The state religion is Rom. Catholicism with an archbishop at Ciudad Trujillo, but other forms of religion are tolerated. The D. army consists of 12,000 officers and men; there is an air corps and a small navy, each of about 2000. The D. R. is the oldest settlement of European origin in the New World, having been founded by Bartolomé Colón (brother of Columbus) in 1496, when it was named Hispaniola, or La Española. After its discovery it was occupied by numbers of Spaniards with imported African slaves, and the local tribes were quickly exterminated. An independent rep. was proclaimed in 1821, when the Spaniards evacuated the is. The present rep. seceded from Haiti (q.v.) in 1841, and became the independent D. R. in that year. The first foreign state to recognise her independence was Great Britain (in 1850). In 1916 Amer. military forces landed in the D. R. and a military gov. was proclaimed. Between 1922 and 1924 a provisional D. gov. was in office, but a duly elected constitutional gov. replaced it in July 1924, with authority in all matters except customs and foreign debt redemption, which latter were administered by an Amer. official. In 1941 a law was passed for the creation of the reserve bank, which, starting with branches purchased from the National City Bank of New York, opened for business on 27 Oct. 1947. In 1947 a new central bank was inaugurated, with total assets (31 Dec. 1947) of 13,625,000 pesos. See O. Schönrich, *Santo Domingo: The Country with a Future*, New York, 1919; S. Welles, *Naboth's Vineyard* (2 vols.), 1928.

Dominion, The, New Zealand national daily newspaper, estab. 1907, pub. in Wellington, with wide rural and metropolitan circulation and influence. Independent in outlook, its plain-spoken editorials, particularly on domestic politics, are widely respected.

Dominion Status, the political S. of any co-equal member of the Brit. Commonwealth of Nations. The self-governing D.s are Canada, Australia, New Zealand, S. Africa, India, Pakistan, Ceylon, and Ghana. Newfoundland (q.v.) was formerly a D., but after having had its D. S. suspended for some years for economic reasons, it finally elected to become a prov. of Canada, and so became in 1949. S. Rhodesia enjoys a large measure of autonomy but should be classified as a self-governing colony. All the 8 great D.s enjoy complete autonomy and appoint their own diplomatic representatives in foreign caps. or in each other's caps. They are bound together with the 'mother country' by their common allegiance to the Crown. Their gradual approach towards independence was recognised in the Balfourian formula adopted in the Inter-Imperial Relations Report of the Imperial Conference of 1926, which Report stated that equality of status is the principle governing inter-imperial relations or affairs as between the U.K. Gov. and the gov.s. of the Dominions, which are there described as

'autonomous communities within the British Empire, equal in status, in no way subordinate one to another in any respect of their domestic or external affairs, though united by a common allegiance to the Crown and freely associated as members of the Brit. Commonwealth of Nations.' This loosely worded formula found its sequel in the Statute of Westminster of 1931, which gave extra-territorial operation to the legislation of the various D. parliaments and removed the last vestiges of the governor's veto. The governor—or governor-general in the case of a D.—has become the King's representative and is not the agent of the U.K. Gov. The common allegiance to the Crown is exemplified in the appointment of the governor-general chosen by the premier of the D. concerned, the right of appeal to the Judicial Committee of the privy council, and the status of all subjects of the D.s as Brit. subjects. The Rep. of Ireland has by Act of the Dail abolished the right of appeal to the Judicial Committee in the case of its own citizens and has eliminated the Crown from the internal part of its constitution. See BRITISH COMMONWEALTH OF NATIONS OF BRITISH EMPIRE; GOVERNOR-GENERAL.

Dominions Art Museums and Galleries.

The National Gallery of Canada in Ottawa, founded by the marquess of Lorne in 1880, is governed by a board of trustees estab. under the terms of the National Gallery of Canada Act, 1913. It consists of a sculpture court and nearly a score of picture and print g.s. The collection includes the work of 11 schools—from 14th-cent. Sienese to Botticelli, Veronese, Titian, Tintoretto, Canaletto; painters of the Dutch, Flem., and Sp. schools—Ruisdael, Jan Lievens, Rubens, Van Dyck, Goya, Murillo; and Hoppner, Gainsborough, and many others of the Eng. school. Veronese's 'The Rest on the Flight to Egypt,' El Greco's 'St Francis in Meditation,' Constable's 'Hampstead Heath,' and John Crome's 'Ruined Buildings' are recent accessions. There is also a section devoted to contemporary Brit. painting, and the most complete collection of Canadian art in existence. The Art Gallery of Toronto (instituted in 1912) has a permanent collection containing works by Bordonie, Boudin, Canaletto, Constable, Corot, Courbet, Delacroix, Gainsborough, Augustus John, Monet, Orpen, Pissarro, Sargent, Sisley, Hogarth, Rowlandson, Renoir, and Fantin-Latour. Canadian artists are also well represented.

The National Art Gallery of New S. Wales, in Sydney, was opened in a temporary structure in 1885, but a new building in freestone has taken its place. The present collection is valued at £157,000 and includes examples of Brit. and foreign modern artists—among them Poynter, Millais, Leighton, Peter Graham, A. de Neuville, Fildes, Shannon, Lavery, Clausen, and A. East. Recent additions include works by Corot, Boudin, Munnings, Orpen, and others. Two special courts are set apart for the works of

Australian artists, which form the most representative collection in any Australian G.—works by John Longstaff, George W. Lambert, Sir A. Streeton, W. Withers, Bernard Hall, Will Ashton, J. J. Hilder, and many others. The National Gallery of Victoria was incorporated in 1869 as the result of the appointment of a commission by the gov. to submit a scheme for the formation of a public M., G., and school of art. The first permanent picture G., now known as the McArthur Gallery, was opened to the public in 1875. G. costing over £175,000 were subsequently added, including 3 in 1932 in a building erected mainly through the bequest of James McAllan of Richmond. In 1904 £189,000 was bequeathed for the acquisition of works of art or antiquities. Works by Turner, Watteau, Reynolds, Corot, Millet, de Wint, Orpen, Ruissdnel, Lavery, Jan van Eyck, Burne-Jones, Bastien-Lepage, Puvis de Chavannes, Hoppner, Gainsborough, Allan Ramsay, Dupré, Courbet, Tintoretto, Titian, and numerous others have been purchased since 1905. Tipolo's 'Banquet of Cleopatra' (purchased 1933, much admired, 1954-5, at the European Masters of the 18th cent. exhibition in London) may be specially mentioned. Two courts of the National Art Gallery of S. Australia, in Adelaide, are devoted to Australian painters, and a fine collection has been built up.

New Zealand's National Art Gallery, in Auckland, opened in 1888, contains 2 collections, one of which belongs to the city corporation, while the other is administered by a trust. The former consists mainly of pictures by both Brit. and foreign artists, with a section devoted to the work of New Zealanders. The latter, known as the Mackelvie collection from the name of its donor who bequeathed it in 1885, contains paintings representative of the modern school of Brit. and continental artists.

The S. African National Gallery, founded in 1872, was taken over by the Cape Gov. in 1875, and the present G. was built in 1928 and opened in 1930. It has paintings by Wilson Steer, Augustus John, Sir W. Rothenstein, and a number of paintings by modern European artists.

Dominions Office, Brit. Gov. dept. dealing with the U.K. Gov. relations with the self-governing D. including S. Rhodesia. Up to 1925 its work had been done by the colonial O., but in that year a separate secretary of state was appointed with a separate (but more or less interchangeable) staff. The D. O. dealt also with the high commissioner. ters. of the Bechuanaland Protectorate, Basutoland, and Swaziland. In July 1947 the title of the D. O. was changed to Commonwealth Relations Office.

Dominis, Marc Antonio de (1566-1624), It. theologian and natural philosopher, b. Arba, Dalmatia. During his novitiate in the Jesuit order he taught rhetoric, mathematics, and physics. It was during this period that he wrote his *De Radiis Visus et Lucis in Vitris Perspectivis et Iride*. He became bishop of Segni and

afterwards of Spalatro, but being implicated in the disputes between Rome and Venice, having quarrelled with the pope and exhibited, moreover, certain Protestant leanings, he was obliged to resign his see. He was subsequently received in 1616 by James I of England. As dean of Windsor he wrote *De Republica Ecclesiastica*. He afterwards expressed a desire to return to the Catholic Church, but some letters he possessed belied his conversion, and he was imprisoned under the inquisition at St Angelo, where he d. in a few months.

Dominium, term in Rom. law which has been adopted into most European codes. It signifies complete and lawful right to and in an object, being distinct from the usufruct which is merely the right arising from actual possession.

Domino (etymology dubious), originally the hood or cape which priests wore out of doors in cold weather. In Venice and other parts of Italy the D. was worn at masquerades and fancy-dress balls by people not otherwise dressed in character. It was a wide-sleeved enveloping cloak with a half-mask. The word D. is popularly used as synonym for mask.

Dominoes (probably so called from the resemblance of the black backs of the pieces to the mask known as the domino), a game, partly of chance, partly of skill, played by any number of players, from 2 upwards. Twenty-eight oblong pieces of ivory, bone, or wood, white on the face, are required. The white face is divided into 2 parts by a line, and, except in the case of the double-blank, there are dots on one side or both sides of this line from the number of which the piece takes its name. Thus there is the double-six, with 6 dots on either side, the six-five, the six-four, etc.; the double-five, five-four, etc., ending with six-blank, five-blank, etc. Sometimes sets are also used ranging up to double-nine and double-twelve. The *block* and *draw games* are played as follows: The pieces, called also cards, are shuffled on the table face downwards, and each player draws the number of cards required, usually 7. The remainder of the pieces form the *stock*. The leader then plays, or, technically speaking, *poses* a D., generally the highest he has: the 2nd player must then pose one from his own set so that one of its numbers shall be the same as one of those on the D. first posed. Thus, if double-six were first posed, he can follow with any D. which has 6 on one side. By some rules, however, if a player pose a double he may play a 2nd card if possible. If a player cannot match he 'passes', and the 1st player (supposing the number be 2) plays again. If the 'draw' game is being played, however, a player who cannot match may draw on the stock until he gets a card that does match, provided always that 2 cards be left in the stock. If a player play out all his pieces he cries 'Domino' and wins the hand, scoring a number of points equivalent to the number of *pips* on his opponent's remaining cards. If neither can play any further, each counts the number of pips on his

remaining D., and each then scores the number of his opponent's pips. Fresh hands are then dealt until one player reaches 100. Double cards are laid cross-wise (*à cheval*). This is the commonest system of playing D. in England, but the *matador* is the commoner form on the Continent and is perhaps the more scientific. The object here is not to match the end number, but to make that number up to 7. There are a large number of other well-known D. games, among them Bergen (each player taking 6 pieces, the object being to play so that the same number appears at each end of the row, so scoring 2 points) and Bingo (played on the principle of Bézique, q.v.). The game probably came from the E.

Domitian (Domitianus), Titus Flavius (AD 51-96), Rom. emperor, younger son of Vespasian (q.v.); succeeded his brother Titus as emperor in AD 81. Though Tacitus (*Hist.* iv. 61, 68) alludes to the immoral practices of his youth, he commenced his reign with an earnest attempt to stem the tide of immorality at Rome. He reorganised the gov. of the provs. and erected some fine buildings in the city. During his reign the conquest of Britain was effected by Agricola, but his arms were humiliated elsewhere. The vices that disgraced his youth, however, grew malignant towards the end of his reign. In constant fear of assassination, he put to death members of his own family and many of his most illustrious subjects. He also exiled Epictetus and other philosophers from Rome. In AD 93 a persecution of the Christians and Jews took place. A conspiracy was formed against the emperor in AD 96, and he was put to death by a freedman in his own chamber, with the connivance of his wife, Domitia.

Domitius Ulpianus, see ULPIAN.

Domodossola, lt. tn. in Piedmont (q.v.), on the Toce, 48 m. NW. of Novara (q.v.). It is 25 m. SE of the head of the Simplon Pass (q.v.), is an international frontier station, and is the chief tn. of the Ossola valleys. Pop. (tn) 10,100; (com.) 12,100.

Domrémy-la-Pucelle, Fr. vil. in the dept of Vosges, on the l. b. of the Meuse, c. 30 m. SW. of Nancy. It is famous as the bp. of Joan of Arc (q.v.). The house where she was b. is preserved as a national memorial, and a basilica (1881) stands on the spot where *la Pucelle d'Orléans* first heard the voices. Pop. 280.

Don: 1. (anc. **Tanais**) Navigable riv. in European Russia, rising in the Central Russian upland and flowing SE. towards the Volga near Stalingrad, then turning SW. to empty into the Sea of Azov. Length 1236 m.; basin 162,000 sq. m. The chief tribs. are the Voronezh, Khoper, Medveditsa, and Severeskiy Donets. The chief port is Rostov-on-D. The Volga-D. Canal (q.v.) connects the D. with the Volga. From the 16th cent. the banks of the D. and its tribs. were colonised by Cossacks (q.v.), and until the Russian Civil war the D. area was the main centre of the Cossacks.

2. Riv. of NE. Scotland, rising in the Loder Hills and flowing E. to the N. Sea near Aberdeen. Length 83 m.

3. Riv. of NE. England, rising in the Pennines and flowing through Sheffield to join the R. Ouse at Goole; 70 m. long.

Don Benito, Sp. tn in the prov. of Badajoz. It manufs. hats and oil, and has a trade in agric. produce and wine. Pop. 20,700.

Don Carlos, see CARLOS, DON.

Don Cossacks, see COSSACKS.

Don Giovanni, see DON JUAN.

Don Juan (lt. **Don Giovanni**), famous figure in legend, whose prototype is found in the Sp. play (pub. in 1630) entitled *El Burlador de Sevilla y convidado*, and attributed to Tirso de Molina. The story runs that D. J., of the noble family Tenorio, is an abandoned profligate living in the days of Pedro the Cruel at Seville. When Ulloa thwarts D. J. in his machinations to seduce his daughter, he is promptly stabbed by the dissolute lover. An ardent disbeliever, D. J. mockingly challenges a stone image of his victim to a banquet in his tomb. The outraged Ulloa accepts and thereupon carries his murderer off to the very hell at which he has so exultingly scoffed. This story has been immortalised by Mozart's magnificent music to Da Ponte's libretto. Hence came the inspiration for Mérimée's novel *Les Ames du purgatoire*, Dumas's *Don Juan de Marana*, and Bulzac's *Elizir d'une longue vie*. Henry Purcell, who used Shadwell's play, *The Libertine*, 1676, was the first to write a musical setting, whilst Gluck's ballet music is still played. Goldoni, Molière, Espronceda, Flaubert, Landau, and Heyse have all coloured the legend according to their own fancy, but of all later writers Zorrilla, whose *Don Juan Tenorio* has come to be regarded as a national work, may justly claim the distinction of having cast the story into its most popular form. D. J. is introduced into Bernard Shaw's play *Man and Superman*. See O. Rank, *Don Juan*, 1924; L. di Bradi, *Don Juan, la légende et l'histoire*, 1930.

Don Quixote, see CERVANTES.

Dona Francisca, see JOINVILLE.

Donaghadee, tn of N. Ireland, in co. Down, situated on the Irish Channel, near Belfast Lough. It is the nearest port to Britain. The harbour is small, and accommodation scanty, but a shipping trade in dairy produce and cattle is carried on. Pop. 3400; summer 6000.

Donat, Robert (1905-), actor, b. Withington, Manchester, educ. Central School, Manchester. Married (1) Ella Annesley Vorse (marriage dissolved), (2) Renée Asherson. D. studied for the stage with James Bernard in Manchester and first appeared at the Prince of Wales's, Birmingham, 1921, as Lucius in *Julius Caesar*. He was a member of the famous Benson company from 1923 until 1928. His first London appearance was at the Wimbledon Theatre, 1928, in *The Merry Wives of Windsor*. He joined the Liverpool Repertory company at the Playhouse in 1928, and from 1930 to 1940 scored many West End successes. He went into management, also with success, in 1943. After being absent from the stage for nearly 6 years, he played Becket

in *Murder in the Cathedral* at the Old Vic, 1953. R. D. has had a particularly brilliant film career. He entered films in 1932 and has had outstanding successes, such as *The Private Life of Henry VIII*, *The Count of Monte Cristo*, *The Thirty-Nine Steps*, *The Ghost Goes West*, *The Winslow Boy*, and *Goodbye, Mr Chips*. He is one of the finest actors the Brit. stage has had for many years, with wonderful sensitivity and charm.

Donatello, or **Donato di Betto Bardi** (c. 1386-1466), It. sculptor, b.



Alinari

DONATELLO'S 'JUDITH' IN FLORENCE

Florence. His father was a wool merchant. D. came to Rome at the age of 17 with his friend Brunelleschi, where the 2 youths, besides carrying on the trade of goldsmith, devoted themselves to the study of architecture. After some years both men returned to Florence rich in ideas and inspiration. D. is celebrated for his marble and bronze statues, which are beautifully executed, and which reveal the nobility and force of those works of antiquity which formed his constant study and delight. He combines the good

points of the Renaissance with his own original way of treating his subject. The Renaissance betokened the revival of the Classic as opposed to the Gothic in the hist. of architecture, and Brunelleschi (q.v.), D.'s life-long friend, was the inaugurator of this new movement. D.'s patron was Cosimo de' Medici, who well rewarded him for his industry. The sculptor was correspondingly generous towards his friends. His prin. works are the marble statues of St Peter and St Mark in the church of San Michele at Florence; a bronze statue of David at Florence; another bronze figure of the equestrian Gattamelata in a public place at Padua. Other sculptural works are the statues on Giotto's belfry, decorative work on the pulpit of San Lorenzo, and figures in the baptistery at Florence. See Lord Crawford and Balcarres, *Donatello*, 1903; M. Crutwell, *Donatello*, 1911.

Donati, Giovanni Battista (1826-73), It. astronomer, b. Pisa. From 1854-64 he discovered 6 comets, the finest, which appeared in 1858, bearing his name. By subjecting the light of a comet to the spectrum analysis, he was able to describe its gaseous composition, and he is noted for his researches on stellar spectra. His work was carried out at the Observatory of Florence of which he became a director in 1864.

Donatio Mortis Causa, gift made in prospect of death. This practice is derived from Rom. law, and is thus defined in the *Institutes* (ii. tit. 7): "A gift made under an apprehension of death, as when a thing is given on condition that, if the donor die, the donee shall have it, but that it shall be returned if the donor shall survive the danger he apprehends or repents of his donation or if the donee die before the donor." Actual transfer is necessary, but where the nature of the goods makes this impossible the transfer of a symbol of ownership (e.g. a key) is permitted.

Donation: 1. **D. of Constantine**, a forged document, probably produced by a cleric at Rome about AD 750 to assist the Popes in extending their temporal dominions. It purported to be a deed of the Emperor Constantine whereby he bequeathed to Pope Sylvester the W. ters. of the empire. It was thought to be genuine until the 15th cent., when it was questioned by many eminent churchmen and finally proved a forgery by Lorenzo Valla. See H. Bettenson, *Documents of the Christian Church*, 1943; also ISIDORIAN DECRETALS.

2. **D. of Pepin**, 756. Pepin le Bref, after his victorious campaigns against the Lombards in 754 and 756, bestowed the conquered ters. on St Peter, i.e. the Pope. This was the true foundation of the temporal power of the Holy See and of the Papal states.

Donatists, powerful sect which arose in the Christian Church in N. Africa at the beginning of the 4th cent. There had long been 2 parties in Carthage: the moderates, headed, until his death in 311, by the bishop Mensurius; and a strong fanatical group, headed by Lucilla, a

wealthy widow. This latter party carried on in a more developed form the African tradition of severity towards *traditores*. On the death of Mensurius, in order to forestall the rigorists the moderate party hastily elected Caecilian as bishop, without awaiting the arrival of the Numidian bishops, and secured his consecration by Felix, bishop of Aptunga. Secundus, bishop of Tigris, treated this act as illegal, and convened a synod of 70 bishops at Carthage, which excommunicated Caecilian. The lector Marjorinus was elected in his stead, and on the death of Marjorinus in 315 Donatus, from whom the sect is named, took his place. Both parties had, before this time, appealed to the emperor Constantine, and his decisions had been in favour of orthodoxy. General synods at Arles (314) and Milan (316) also pronounced against the D., but the schism spread, and there were soon rival bishops throughout N. Africa. The D. excommunicated the rest of the Church, baptising again all Catholics who seceded to them. The orthodox reaction against the practice gave rise to the theory of a sacramental character imparted in baptism, confirmation, and holy orders. Finding them proof against persuasion, Constantine ignored them, but they were subjected to severe persecution under Constantine. In 411 a great disputation, attended by 286 Catholic and 279 Donatist bishops, was held at Carthage, and decision again given for the orthodox. St Augustine (q.v.) was among their strongest opponents. The members of the sect were subject to cruel persecutions in which they gloried; and in the 7th cent. they were annihilated by the Saracens. See D. Voelter, *Ursprung des Donatismus*, 1883; P. Monceaux, *Histoire littéraire de l'Afrique chrétienne* (vols. iv, vi), 1913, 1923.

Donatus, Aelius (4th cent. AD), Lat. grammarian and commentator, under whom St Jerome studied. The preface, life, and introduction to the *Eclogues* are the only portions of his commentary on Virgil that can be definitely said to have survived. We likewise possess his commentary on Terence, though probably not in its original form.

Donau, see DANUBE.

Donaueschingen, Ger. tn in the *Land* of Baden-Württemberg (q.v.), on the Danube (q.v.), 64 m. SSW. of Stuttgart. It was largely rebuilt in 1908 after a serious fire. There are brewing and textile industries. Pop. 7000.

Donauwörth, Ger. tn in the *Land* of Bavaria (q.v.), at the confluence of the Danube (q.v.) and the Wörnitz, 54 m. NW. of Munich. It was once a free city of the Empire. The offer of the tn, then Protestant, to Bavaria by the emperor Rudolf II (q.v.) was one of the contributory causes of the Thirty Years' War (q.v.). Marlborough (q.v.) defeated the Fr. and Bavarians nearby in 1704; and here, in 1805, the Fr. under Soult (q.v.) defeated the Austrians. There is a ruined fortress, parts of the ancient walls remain, and there is a notable Gothic church.

There is also a splendid baroque (former Benedictine) abbey. Ironware is manufactured. Pop. 10,000.

Donawitz, Austrian tn in the prov. of Styria, 2 m. W. of Leoben. It has lignite mines and steel works. Pop. 18,000.

Doncaster, co. bor. of Yorks, England, on the r. b. of the Don, 35 m. SW. of York and 156 m. from London, on the Great N. Road. Apart from its importance as a centre for the richest coal-fields in the co. and its manuf. of locomotives and rolling stock for Brit. Railways, D. has varied industries, including confectionery, men's clothing, agric. machinery, wall-paper, electrical equipment, and brass, fencing, and wire rope works. The Mansion House near Priory Place, the first stone of which was laid in 1744, contains one of the finest banqueting halls in the country and D.'s municipal treasures include a mace dating from 1683. Other noteworthy buildings are the guildhall, now used solely for police H.Q. and courts; the central library in St George's Gate; the museum and art gallery overlooking the Beechfield Gardens; the technical college, for which a new college is now projected; and the corn exchange opened in 1873, adjoining which is the mkt hall and covered mkt.—among the best of their kind in the co. The corporation owns all these buildings, as well as the public utilities, the airport, and the racecourse. (The famous St Leger race has been run on this course since 1776. In addition to 5 'flat' meetings, there are 3 National Hunt meetings held each year.) It also owns 7 public parks and pleasure grounds: these include the Hexthorpe Flatts (28 ac.) containing the well-known beauty spot 'the Dell'; Elmfield Park opened in 1923; and Sandall Park, a new park in rural surroundings. To the N. of French Gate is the par. church of St George. The old building was destroyed in 1853, and the present medieval-looking building, with elaborately pinnacled and battlemented tower, was designed by Sir Gilbert Scott. The Romans had a military station here named *Danum* and in Domesday Book the place name occurs many times as 'Donecastre.' In 1194 Richard I gave the tn its first known charter, and it was a charter of Edward IV, dated 30 Oct. 1467, which authorised the election of a mayor. From such street nomenclature as French Gate, Baxter Gate, St Sepulchre Gate, etc., it might be inferred that in feudal times D. was fortified; but according to Leland it was never a walled tn, the word 'gate' in this context meaning simply 'street.' Such names as Priory Place and Greyfriars Road indicate the former presence of religious orders. In the mid-17th cent. John Evelyn described D. as 'a large, fair town, famous for great wax lights and good stockings.' For its loyalty in the Civil War Charles II granted the tn the privilege of being a free bor. of itself. The traditions of the tn when it was chiefly interested in agric. are kept alive in Robert Southey's memoirs of Dr Daniel Dove. For generations D.

retained the character given it by Southey, but with the advent of the railway the character of the tn was completely changed and works for the manuf. of brass, wire, wagons, and woollens opened in due course, while the development of the S. Yorks coalfield soon led to further great changes. In 1926 D. was constituted a co. bor. and granted arms which incorporate a Saxon crown indicative of the fact that D. (part of which pertained to the seke of Hexthorpe) belonged to Earl Tostig. Pop. 82,500.

Donegal: 1. Co. of Ireland in the prov. of Ulster, but belonging to the Rep. of Ireland, bounded by the Atlantic Ocean and the cos. of Londonderry, Tyrone, Fermanagh, and Leitrim. The coast-line is very irregular, being broken by Lough Swilly, Sheep Haven, Boyleagh Bay, Gweebarra Bay, and Donegal Bay. The coast is fringed by many is., of which the chief are Inishtrahul, Tory Is., and Aran Is. The surface of the country is mountainous. These mts include 8 summits of which Mt Errigal (2466 ft) is the highest. Adjoining Malin Beg Head in the W. of Donegal Bay there is a sea cliff 1964 ft in height. The chief rvs. are the Foyle, the Finn, the Swilly, the Erne, the Gweebarra, the Gweedore and the Owenena. The co. also possesses many lakes, of which the prin. are Loughs Berg, Deele, Gartan, Kesh, and Glen. The climate of D. is inclement. Rude winds prevail, rendering great tracts of the co. barren. The mould in some regions consists of light clay, suitable for crops of potatoes, oats, and barley. Agric. implements are for the most part primitive. The breeding of cattle and sheep is the most profitable occupation but the fisheries of the coast support most of the inhab. The country women occupy their time with the embroidery of linen, lace, and muslin. Linen and tweed (Donegal tweed) are also manuf. in the co. Of the historical remains the most interesting is the Grianan of Aileach, the palace of the kings of N. Ireland from most anct. times. There are also interesting relics of St Columba and the famous Purgatory of St Patrick situated on an is. in Lough Berg. The co. tn is Lifford. Area 1,193.581 ac.; pop. 136,317.

2. Mkt tn at the head of D. Bay. D. Abbey is the remains of a Franciscan friary (15th cent.), and D. Castle, now a ruin, was restored by Red Hugh in 1505. Pop. 1100.

Donelson Fort, camp at Dover, Tennessee. It was built in the time of the Civil war by the Confederates for the purpose of guarding the Lower Cumberland R., and it consisted of 2 lines of entrenchments on the land side, and water batteries. It was taken by the Federals in 1862, the prisoners numbering nearly 15,000, which was considerably over two-thirds of the original army.

Doneraile, small tn in co. Cork, Rep. of Ireland, situated on the R. Awbeg, about 6 m. N.E. by N. of Mallow. Pop. 800.

Donets Basin (abbreviation **Donbas**), the most important coal-mining basin of the U.S.S.R., the core of the S. Industrial

Region (q.v.). It is situated in the SE. Ukraine (Stalino and Voroshilovgrad oblasts) and the Kamonsk oblast of the Russian Federal Rep., on the slightly inundated plain of the Donets Plateau, with steppe landscape: E.-W. 240 m., width N.-S. 90 m., total area 9000 sq. m. There are rich deposits (70 milliard tons) of excellent anthracite and steam coal in comparatively thin seams, usually under 3 ft, also deposits of mercury, salt, and mineral building materials. Recent prospecting has shown that coal deposits extend far beyond the old boundaries of the D. B. to the E., N., and W. There are large coal-mining (since 1722), iron and steel (since 1795), chemical (since 1889), and heavy engineering (since 1895) industries. Powerful thermo-electric stations have existed since 1910. The area has diverse agriculture. There is a dense railway network. The chief industrial centres are the Stalino-Makeyevka and Kadiyevak-Voroshilovsk conurbations, Voroshilovgrad, Gorlovka, Shakhty, and Kramatorsk. Coal was discovered in the D. B. in 1721 and mining began immediately, but rapid industrial development started in the 1870's, and soon the D. B. became the most important centre of heavy industry in Russia. Twice the industries were ruined, during the Civil War (1918-20) and the Second World War (1941-3), and on both occasions followed periods of restoration (1920-7, 1943-8) and further expansion. Both before 1917 and during the period of the Dictatorship of the Proletariat (q.v.) the D. B. was a stronghold of the Bolshevik party. The Shockworkers' and the Stakhanov movements (q.v.) originated here. On the other hand, the anti-Communist Industrial party (q.v.) allegedly had many adherents among the technical intelligentsia of the D. B.

Dong-nai, riv. of Cochinchina (q.v.), rising at an altitude of 5000 ft. It receives the Saigon R. and others. After a course of 250 m. it enters the China Sea to the NE. of the Mekong delta.

Dong-Trieu, coal-mining tn of Quang-yen (q.v.), Tonking (q.v.), and scene of heavy fighting in 1945-54 war in Viet Nam (q.v.). Produced 500,000 tons of high-grade anthracite annually before the Second World War; no later figures are available.

Dongola, Sudan, consists of a long, narrow plain, situated in the valley of the Nile, and includes both banks of that riv., while to the E. lies the Nubian desert, and to the W. is the Libyan desert. From 1820 to the Mahdi insurrection of 1885 it was Egyptian. Gen. Kitchener took it in 1896. Merowé (q.v.), the cap. of the prov. (pop. 15,000), is situated on the l. b. of the Nile. New Dongola (pop. 16,000) is the chief centre of trade. Old D., a decayed tn, is 75 m. SSE. of New D. The Nubian race are the prin. inhab. of the prov.

Doni, Antonio Francesco (1513-74), It. priest and writer, b. Florence. He settled down in Venice as a printer, publishing many original but eccentric books. His 2 main works, both pub. in

1552, are *I Marmi*, imaginary conversations on the 'marble steps' of the cathedral of Florence, and *I Mondi*, a picture of a social utopia, which reflects the influence of Sir Thomas More.

Dönitz, Karl (1892-), Ger. adm., b. Mecklenburg of a family of shipowners. At first he served in the cruiser *Breslau*, but transferred to the submarine branch of the service and served for the greater part of the First World War in U-boats. Took part in many attacks on Allied convoys in the Mediterranean until he was captured in 1918 and interned in England. After the outbreak of war in 1939 Hitler chose him to be head of the U-boat service. He had a fanatical faith in the power of the U-boat to gain victory for Germany by destroying the sea-power of the Allies, and his successes in the early months seemed to confirm his optimism. He developed the 'pack' system of attack. But in 1943 the tables were turned and the Allies got the upper hand. D. attained the rank of adm. in 1942 and that of grand adm. in 1943, in which year he succeeded Raeder as commander-in-chief of the Ger. Navy. On the Ger. surrender he put himself forward as the successor to Hitler, with the style of Führer. But he was arrested and held for ultimato trial as a war criminal, and subsequently imprisoned, being released in 1956.

Donizetti, Gaetano (1797-1848), It. composer, studied music in his native place, Bergamo, and later at Bologna. There is no truth in the story that he was of Scottish descent. The opera which made his name widely known was *Anna Bolena*, produced in 1830 at Milan, although he had already produced over 30 before. His *Elixir of Love*, 1832, abounds in clear pure sentiment and radiant joy. Altogether he composed more than 70 operas. His *Lucia di Lammermoor*, produced at Naples in 1835, was his greatest success and gained him a professorship of counterpoint in that city. His closing years were saddened by signs of lunacy. Considering that his rivals were Rossini and Bellini, D.'s contemporary popularity is a remarkable tribute to his talents. *La Fille du Régiment*, 1840, was his most popular work in Fr., but the finest of all is *La Favorite*, produced in the same year, and the most enduring is the delightful *Don Pasquale* of 1843. In the 'marriage contract' and 'tomb' scenes of *Lucia* and in *Favorita* and *Linda*, 1842, he proves himself as gifted a master of melody as Bellini, and a more dramatic master of the concerted number. His melodies demanded capable singers in a period when opera was essentially an exhibition of vocal tone and technique. D. combined the gift of writing pleasant melodies and composition peculiarly suited to the voice with extreme facility, vigour, and humour. He became paralysed in 1845. See G. Gavazzeni, *Gaetano Donizetti*, 1935; and A. Fraccaroli, *Donizetti*, 1944.

Donjon, see DUNGEON.

Donkey, see ASS.

Donnay, Maurice Charles (1859-1945),

Fr. playwright and author, b. Paris. His plays, characterised by keen observation, gained great popularity, and D. was elected to the Academy in 1907. Among his plays are: *Amants*, 1895; *Douloureuse*, 1897; *L'Affranchie*, 1898; *La Patronne*, 1908; *Les Éclaircissements*, 1913; *La Chasse à l'Homme*, 1920; *Un Homme léger*, 1925; *La Reprise*, 1925; *L'Ascension de Virginie*, 1929. Of his non-dramatic works *Alfred de Musset* appeared in 1914. See H. Duvrernois, *M. Donnay*, 1928.

Donne, John (1572-1631), clergyman and poet, b. London, son of Rom. Catholic parents, connected through his mother's family with Sir Thomas More and with John Heywood, the dramatist. He is quaintly enough the hero of a truly romantic love-story. This is strange because the very glow of his spiritual life, combined with his melancholy and fantastic humours, would seem to leave small room for romance. Both at Oxford and Cambridge he proved an excellent scholar, but his religion, Rom. Catholicism, forbade his taking the oath necessary for a degree. His lifelong intimacy with Sir Henry Wotton dates from his Oxford days. At 17 he began to study law at Lincoln's Inn, and it was at this time that he became a Protestant, finding himself after careful scrutiny more in sympathy with the Anglican than the Rom. standpoint. After a year spent in Italy and Spain he became Lord Ellesmere's secretary, fell in love with his patron's niece, whom he secretly married, and thus lost his position. D. was imprisoned by his father-in-law, but finally won back his freedom and his wife after a protracted lawsuit which ran away with nearly the whole of his property. With the accession of King James his fortune changed. In 1610, desirous of a place at Court, he made a bid for royal patronage with *Pseudo-Martyr* (a contribution to the disputes about the Oath of Supremacy and Allegiance), and in 1611-13 with *Ignatius his Conclave* (an attack on the Jesuits), an *Elegy on Prince Henry*, and an *Epithalamium* for the marriage of the princess Elizabeth. So delighted was the king with *Pseudo-Martyr* that he insisted on the author's taking holy orders and appointed him his chaplain-in-ordinary. Other honours followed, and at his death, which was hastened by consumption, D. was vicar of St Dunstan's and dean of St Paul's Cathedral, London.

Isaac Walton has left a delightful biography of D. In the pulpit he was, according to his biographer, 'always preaching to himself like an angel from a cloud, but in none.' Writing of D.'s poetry, Saintsbury justly praises 'the magical illumination of obscure and shadowy thoughts with the lightning of fancy,' whilst Dryden's verdict is that he was 'the greatest wit though not the best poet of our nation.' But it would be difficult to find a better appreciation than Ben Jonson's observation that he was 'the first poet in the world in some things,' but that he would perish 'for not being understood.' Although there has been a decided revival of interest in D.'s poetry

in recent years, the richness of his fancy and wealth of erotic fervour are obscured from the ordinary gaze by a host of fantastical conceits, of 'quips and cranks' expressive of far-fetched, if ingenious, imaginings, and of wanton deformities, both of wit and metre. Like other poets of the 'metaphysical' school, he strives to ennoble poetry by applying it to the phenomena of science and making his muse the handmaid of natural philosophy. D. is the lover and sensualist, but he reviews his love in philosophical terms, or explores it with the images conceived in his scientific and theological reading. 'He can perceive beauty, but at the very moment of that perception, he sees the corpse, the ceremonial cloths, the skeleton. He knows passion, but he can mock at the physical body through which passion is transmitted . . . This frankness, in passion, this despair of making a unity out of the broken images of life, have brought him close to some contemporary poets' (B. Ifor Evans), and partly explain the revival of interest in his works. The standard ed. of Donne's poems is that of H. J. C. Grierson, 1912, 1929; and some of his prose works appear in *The Complete Poetry and Selected Prose*, ed. by J. Hayward, 1930. Bibliography by G. Keynes, 1914, 1932. See lives by Izaak Walton, 1658; H. F. A. Fausset, 1924; J. Bennett, 1934; also Sir E. Gosse, *Life and Letters of John Donne*, 1899; Mary P. Ramsay, *Les Doctrines multivales chez Donne*, 1917, 1924; Evelyn M. Simpson, *A Study of the Prose Works of John Donne*, 1924; G. Williamson, *The Donne Tradition*, 1930; C. M. Coffin, *John Donne and the New Philosophy*, 1937; J. B. Leishman, *The Monarch of Wit*, 1951.

Donnybrook, suburb of Dublin (q.v.). Rep. of Ireland.

Donoghue, Stephen (1885-1945), jockey, b. Warrington, Lancs. Rode Derby winner in 1915, 1917, 1921, 1922, 1923, and 1925. He retired from racing in 1937 and took up training. Wrote a novel: *The Luck of the Gentle Gaffer*, 1926; and an autobiography, *Just my Story*, 1923.

Donzy, Fr. tn in the dept of Nièvre. It has Rom. remains. Cardinal Mazarin (q.v.) founded factories here in 1659. Pop. 2000.

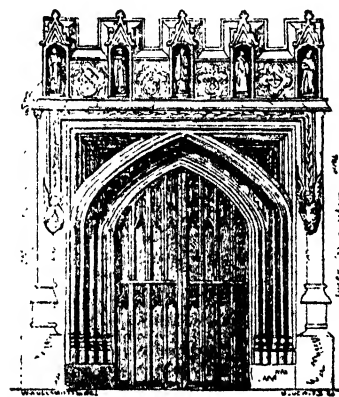
Doolittle, Hilda (1886-), Amer. poetess, b. Bethlehem, Pennsylvania. Educ. at Bryn Mawr College, she came to Europe in 1911 and remained to become one of the Imagist group of poets and marry Richard Aldington, one of their leaders; after their divorce in 1937 she settled in Switzerland. Her books of verse include: *Sca Garden*, 1916; *Hymen*, 1921; *Heliodora*, 1924; and the religious trilogy *The Walls Do Not Fall*, 1944, *Tribute to the Angels*, 1945, and *Flowering of the Road*, 1946. Of all the Imagist poets she remained most faithful to their principles, her lyrics displaying an objective approach and a chiselled beauty reminiscent of ancient Greek art.

Doom, or **Doom**, popular name of *Hyphocne thebaica*, a palm-tree of Upper Egypt, clumps of which occur near Thebes. The fruit is about the size of an orange, reddish in colour, and has a spongy, tasteless, but nutritious rind.

Doomsday Book, see DOMESDAY BOOK.

Doon, loch and riv. of Ayrshire, Scotland. The loch is 3 m. S. of Dismellington, some 6 m. long and 1 m. wide, nearly 700 ft above sea-level. There are sev. small is., and it is enclosed by mts. The R. D. flows through the loch, emptying itself into the firth of Clyde 1 m. from Ayr. There are trout and salmon in both loch and riv., and the stream has been immortalised by Burns.

Door, a movable barrier closing the 'doorway' to a building or room. It may be hung on hinges, or pivoted at top and bottom, or made to slide; and may be secured by locks, latches, and bolts.



DOORWAY AT MAGDALEN COLLEGE, OXFORD (15th cent.)

The doors are of late-Gothic type, midway between the ledged type and the panelled type

D.s are normally made of wood; but ancient tombs were occasionally closed by stone D.s; and a pair of magnificent bronze D.s, each measuring c. 24 ft high by 7 ft wide, still exist in the Pantheon at Rome, AD 112. In the Brit. Museum is a wooden D. from Egypt which has survived in perfect preservation for over 3000 years. It measures c. 8 ft by 4 ft, and consists of 5 vertical boards 24 in. thick, held together by 3 horizontal battens. This simple type, still used for sheds, etc., in modern practice everywhere, is a 'ledged door.' The addition of diagonal braces, to prevent the D. sagging from its hinges, produces the familiar 'ledged and braced door.' During the Middle Ages framed D.s, in which the horizontal 'rails' are tenoned into the vertical 'stiles,' were introduced; and, in Tudor times, panelled D.s followed. These consist of a framed structure filled with thin panels, the latter becoming progressively larger through the 17th-18th cents. A modern innovation is the factory-made flush-panel D., which has a rough frame entirely

concealed by a thin veneer of polished wood. *See* JOINERY.

Doorn, small tn in the prov. of Utrecht, Netherlands, 11 m. SE. of the city of Utrecht. At D. the ex-emperor of Germany, William II, resided from 1920 to 1941.

Doornik, *see* JOURNAL.

Dopes, for fuels, *see* MOTOR CARS and MOTOR CYCLES.

Doppler, Christian Johann (1803-53), celebrated Austrian scientist, b. Salzburg, chiefly remembered for 'Doppler's principle,' 1842. This states (a) that the pitch of a sound is changed if the object emitting it is moving relative to the observer, and (b) that the light emitted by a moving source is changed in colour as perceived by a relatively stationary observer. In each case the frequency derived is greater or less than the actual frequency according to the body's approach or recession. D.'s principle has proved of great value in physics and astronomy.

Dorado, 'the sword-fish,' a S. constellation, discovered by Bayer in 1603, situated in the S. hemisphere between Pictor and Hydrus. Alpha Doradus is a white star of 3.5 magnitude, with a peculiar spectrum. The Great Looped Nebula surrounding 30 Doradus is a bright nebula, visible to the naked eye, and is situated in the larger Magellanic Cloud.

Doran, John (1807-78), miscellaneous writer, b. London, of Irish parentage. He obtained a doctorate of the univ. of Marburg, in Prussia, devoted himself to literature, and in 1869 was editor of the *Athenaeum*, and, later, of *Notes and Queries*. He pub. a number of works dealing with the lighter phases of manners, antiquities, and social hist., often bearing punning titles, e.g. *Table Traits with Something on Them*, 1854, and *Knights and their Days*, 1856. He also wrote *Lives of the Queens of England of the House of Hanover*, 1855, and *The History of Court Fools*, 1858, and ed. Horace Walpole's *Journal of the Reign of King George the Third*, 1859. *Their Majesties' Servants*, 1864, is a hist. of the stage.

Dorat, Claude Joseph (1734-80), Fr. author and poet. He left the career of advocate to devote himself to literature, and contributed largely to *L'Amanach des muses*. He wrote comedies, fables, madrigals, romances, and dramas, but had no very real talent, being merely a 'bouffon poet' of considerable popularity in his own time. Among his plays are: *Zulica*, 1760, and *Adelaide de Hongrie*. His *Réponse d'Abdard à Heloïse* gained immediate popularity. Among his poems may be mentioned: *Sélim et Sélima*, *Le Mois de mai*, *Les Tourterelles*.

Dorat, Jean, *see* DAURAT, JEAN.

Dor-beetle, or *Geotrupes stercorarius*, species of Scarabaeidae frequently found in England, where it is sometimes called the buzzard clock. It is a dung-B., not quite an inch in length, and in colour it is a metallic black. In summer evenings it flies about at dusk with a curious droning sound.

Dorcas Society, name given to working parties of ladies, where they make garments for charity. The name is derived from Dorcas (mentioned in Acts ix. 36), who made coats for the widows.

Dorchester: 1. Municipal bor., co. tn of Dorset, 120 m. SW. of London, and very picturesquely situated. It is Roman in origin, and was called Durnovaria. A fragment of its walls remains; their line is now marked by pleasant avenues which surround about three-fourths of the tn. The foundations of a Rom. house, discovered in 1937 in the grounds of the new co. hall, are preserved as an ancient monument. Maumbury Rings was used as the amphitheatre of the Rom. tn, although its origin goes back to late Neolithic times, about 2000 BC. Particularly interesting buildings in the tn are St Peter's Church, Judge Jeffrey's Lodgings, and Napper's Mite (16th cent.), formerly an almshouse. The museum has remarkably fine collections exhibiting the archaeology, natural hist., and geology of the whole co. The tn has literary associations with Wm Barnes, the poet, and Thomas Hardy, the latter being b. 3 m. from D. at Higher Bockhampton, and living for the last 50 years of his life at Max Gate, which he built on the outskirts of the tn. Maiden Castle, the pre-Rom. tribal cap., is a magnificent earthwork 2 m. SW. of the tn. Pop. 12,000.

2. Dist. of Boston, U.S.A., containing 2 of the oldest houses in New England and a burying ground dated 1634. It was founded by 110 colonists from Dorsetshire, England, encouraged thereto by Rev. John White, of Trinity par., D. *See* W. D. Orcutt, *Good Old Dorchester*.

Dorchester-on-Thames, par. and vil. of Oxon., England, 9 m. SE. of Oxford. In AD 634 Cynegils, king of the W. Saxons, was baptised here by St Birinus, the apostle of Wessex, King Oswald of Northumbria standing sponsor. The bishopric founded here in the time of Birinus lasted until removed to Lincoln by Remigius (1067-92). There is an Augustinian abbey church dating from Norman times; D. is also the site of a Rom. station (Dorocina), and of a Brit. earthwork. Pop. 1503 (1954).

Dordogne: 1. Dept of SW. France, formed from Périgord, and parts of the ancient provs. of Limousin and Angoumois. The surface is in general hilly and well wooded, with beautiful and fertile valleys in the centre of the dept, and marshes in the E. There are numerous vineyards on the hill-slopes, chestnuts are produced in great quantities, and wheat, maize, tobacco, and potatoes are grown. The truffles of Périgord are famous. Some iron, coal, and manganese are found. There are leather, textile, and distilling industries. The prin. tns are Périgueux (the cap.), Bergerac, Nontron, and Sarlat (qq.v.). Area 3550 sq. m.; pop. 377,900.

2. Riv. of France, which rises in the Puy de Sancy, Puy de Dôme, and flows through Souillac, Bergerac, Castillon, Libourne, and Cubzac to join the Garonne at Ambès, a distance of 306 m. *See*

A. H. Brodrick. *The Caves of Lascaux*, 1948.

Dordrecht (popularly called **Dort**), seaport on the R. Merwede, 12 m. SE. of Rotterdam, in the prov. of S. Holland. Intersected by a number of canals which greatly facilitate communications, it is engaged in many industries, such as ship-building and engineering, and has manufs. But Rotterdam has diverted a great part of the traffic which made D. the richest and most important trading tn of Holland and a member of the Hanseatic League. It still retains many quaint thoroughfares



H. Kumpke

THE VOORSTRAATSHAVEN, DORDRECHT,
SOUTH HOLLAND

and gabled houses. The original residence of the counts of Holland, it witnessed in 1572 the declaration of independence of the United Provs., and in 1618-19 the famous synod of Protestant theologians which anathematised Arminius' (q.v.) heresies. Pop. 75,590.

Doré, Louis Auguste Gustave (1832-83), Fr. painter and illustrator, b. Strasburg, drew first for the *Journal Pour Rire*, 1848, and later for the *Journal Pour Tous*. His drawings show genius for grotesque and humorous illustration as also fertility of invention and preference for the fantastic. He illustrated an ed. of the Bible; among other works illustrated by him were Balzac's *Les Cent Contes Drôlatiques*, 1837, trans. into Eng. as *Droll Stories collected from the Abbeys of Touraine* (with 425 engravings by D.), 1874; Dante's *Divina Commedia*, 1863-6; Milton's *Paradise Lost*, 1866; Tennyson's *Idylls*, 1867-8; La Fontaine's *Fables*, 1867; and Rabelais' *Gargantua and Pantagruel*. His *London*

contains some of his best work. As a sculptor he is remembered for his statue of Dumas, in Paris, whilst he was ambitious for fame as an historical and religious painter. The Doré Gallery in London was long decorated with his huge canvases depicting 'Christ leaving the Praetorium,' 1867-72, etc. See B. Roosevelt, *Life and Reminiscences of Gustave Doré*, 1885; and life by M. Rose (ed. J. Laver), 1945.

Dore, Monts, volcanic mt group in the dept of Puy-de-Dôme, France, part of the Auvergne system. The highest point is the Puy-de-Sancy (6000 ft).

Dorema, genus of Umbelliferae. *D. ammoniacum*, a perennial herb, is found in dry plains in Persia and Baluchistan; it yields the gum ammoniacum used in medicine.

Doria, Andrea (1466-1560), Genoese soldier, b. Oniglia. He served under various It. princes on different expeditions; he then entered the service of the Fr. king Francis I, and eventually became high adm. of the Levant. Later on he resigned his command of the fleet, as he feared for the safety of Genoa, which was threatened by the Fr., and transferred his services to the emperor Charles V, who made him prince of Meli. In 1528 D. expelled the Fr. from the garrison of Genoa, and ruled the city himself on republican lines. He was very active in his attacks against the Turkish pirates in the Mediterranean, and was styled 'father and liberator of his country.'

Dorians, one of the 3 main branches of the Hellenic race. They probably came simultaneously from the N. and from Crete, occupying the Peloponnesus, the Sporades, SW. Asia Minor, and the S. coast of Sicily. The Dorian invasion is commonly supposed to have taken place about 1100 BC; it is associated in legend with the return of the Heraclidae. Compared with other Greeks, the D. were more conservative and aristocratic in outlook, and in the Peloponnesus at any rate they seem never to have forgotten that they were a conquering race. Hence the austerity of Spartan customs and the permanent subjection of the helots.

Doric Dialect, one of the 4 main dialects of the anct Gk language. It was spoken in every region where Dorians (q.v.) settled. The broad features which distinguish it from Ionic are *mes* for *men* in 1st person plural; *-ae* and *-æ* for *ē*; *ka* for *an*; and *-sēo*, *-siō*, and *-sō* as endings for the 1st person of the future. The Dorians invariably claimed a greater antiquity for their dialect than Ionic, a fact which probably accounts for the archaic D. which appears as an anachronism in Attic drama. Pindar wrote in D.

Doric Order, earliest and most characteristic type of Gk architecture, of which the Parthenon at Athens is a fine example. The D. column is a massive fluted pillar imposing in its severity and absence of adornment. There is also a *kom.* D. O. See ORDERS OF ARCHITECTURE.

Dorigny, Sir Nicholas (1657-1746), Fr. engraver, b. Paris. He studied at Rome,

and from 1711 to 1719 worked for Queen Anne at Hampton Court, engraving the cartoons of Raphael. He was knighted by George I in 1720, and in his later years worked in Paris, where he d.

Dorion, Sir Antoine Aimé (1816-91), Canadian statesman. He became leader of the Liberal party, and was the first to enunciate clearly the principle of federation as applicable to his country. As minister of justice in the Mackenzie gov. he passed the Electoral Law, 1874, and the Controverted Elections Act. In 1874 he was appointed justice of the prov. of Ontario.

Doris, small mountainous dist. of anct Greece. It was surrounded by Phocis, Locris, Aetolia, and Malis, and contained the sources of the Cephissus. The Dorians claimed this ter. as their home. It is now included in the gov. of Phocis.

Doris, or **Archidoris**, important genus of nudibranchiate molluscs, typical of the family Dorididae. The species are usually a white, brown, or yellow colour, whence they are called sea-lemons, but they often take the colour of their surroundings. *D. pilosa* and *D. tuberculata* are well-known members of the genus.

Dorking, urban dist. and mkt tn of Surrey, England, 6 m. W. of Reigate and 24 m. S. of London. It enjoys a lovely setting, ringed by wooded hills and with some of Surrey's finest scenery in the vicinity. To the N.E. of the tn the landscape is dominated by Box Hill (q.v.); also in the vicinity are Leith Hill, Rammer Common, The Nower, Mickleham Downs, and Glory Wood. Meredith d. (1909) at Flint Cottage, Box Hill, where he had lived since his second marriage, and is buried at D. D. fowls are noted for their 5 claws. Pop. 20,050.

Dormer, or **Dormer Window**, originally a window in a dormitory (q.v.) or attic-bedroom; hence any window, whether with a flat or sloping top, rising from a sloping roof. D.s have always formed a prominent feature in Fr., Flem., and Ger. architecture.

Dormitory (Lat. *dormitorium*, a sleeping place), originally the sleeping quarters of monks. In some monasteries the D.s were on the ground floor, giving easy communications with the church, though generally they formed the upper storey of the cloisters. Sometimes they were long halls, but more often a series of cells or cubicles. To-day the name is applied to communal bedrooms in schools, etc.

Dormont, residential bor. of Pittsburgh, Pennsylvania, U.S.A. Pop. 13,405.

Dormouse, name given to members of the rodent family Muscardinidae, consisting of small, arboreal animals living in the Old World. The eyes and ears are large, the tail is long and hairy, and the intestine has no caecum. The animals are squirrel-like in habit and diet, but they are nocturnal. *Muscardinus vellianarius*, the common D., is found all over Europe, and is remarkable for its winter sleep, the period of time during which it hibernates being about 6 months. *Elis glis*, the fat or squirrel D., is an allied European species.

Dornbirn, Austrian tn in the prov. of Vorarlberg, on the Dornbirner Ache, near the Lake of Constance. It has iron, chemical, and textile industries. Pop. 22,550.

Dornburg, Ger. tn in the dist. of Gera, on the Thuringian Saale, 22 m. WNW of Gera (q.v.). It has 3 castles: the Altes Schloss was frequently used as a residence by the emperors Otho II and III; the Neues Schloss, built in the 18. style in 1748, has associations with Goethe; and the 3rd castle is a modern structure. Pop. 1300.

Dornoch, par., royal and police burgh, and cap. of the co. of Sutherland, Scotland. The tn is situated on the N. of Dornoch Firth, 14 m. E. of Bonar Bridge, and 8 m. SE. by S. of Mound Station. In pre-Reformation times it was the see of a bishop, and Gilbert de Moravia, who d. in 1245, and was the last on the calendar of Scottish saints, built a cathedral, which was restored in 1837 by the 2nd duke of Sutherland. The last execution for witchcraft in N. Britain took place here in 1722. Skibo Castle, about 4 m. from D., belongs now to a daughter of the late Andrew Carnegie. The golf links in the vicinity of D. are very fine and are the earliest recorded (1616). Pop. of par. 2500; tn 720.

Dorohoiu, or **Dorogoi**, tn of Rumania, 75 m. NW. of Jassy in prov. of Suceava. There is considerable trade in dairy and farm produce, also timber. A noted ann. fair is held in June. Pop. (1930) 16,000.

Doronicum, or **Leopard's Bane**, genus of bright orange composite plants found in Europe. *D. plantaginifolium*, L. f., and *D. pardalianches*, Great L. B., grown in gardens, have become naturalised in Britain.

Dorp, Afrikaans (q.v.) word for a vill., in common use throughout S. Africa.

Dorpat, see TARTU.

D'Orsay, Alfred Guillaume Gabriel, Count (1801-52), Fr. dandy, b. Paris, the 2nd son of Gen. Count d'O., served in the Fr. Army until 1822, when, after a tour of the Continent with the earl and countess of Blessington, he came to England. Though married to a daughter of Lord Blessington by his first wife, d'O. was on very intimate terms with Lady Blessington. During his 20 years' residence in England he executed a series of admirable drawings of his most noted contemporaries, and was noted as a brilliant conversationalist. He became bankrupt in 1849 and returned to Paris, where he d. He was appointed Director of Fine Arts in Paris by Louis Napoleon after the *coup d'état*, but he did not live to fill the position.

Dorset, maritime co. in the SW. of England, the co. tn being Dorchester. Chalk downlands provide the central feature of its topography and separate the heathlands of the E. from the clay pastures of the N. and W. To the E. the beautiful coastline is broken by Poole Harbour, 10,000 ac. in extent, to the S. of which lies the peninsula known as the Is. of Purbeck. Chesil Bank is a remarkable stretch of shingle connecting the Is. of

Portland with the mainland and continuing unbroken along the coast to Bridport. At Portland Roads the protection afforded by the Chesil Bank has been augmented by breakwaters to provide an important harbour for the R.N. The prin. streams are the Stour, flowing S.E. into Hants, and the Frome and Piddle, which enter Poole Harbour. Agriculture is the chief industry, the co. being noted for its excellent dairy produce. Second in importance is the holiday industry. Poole, Swanage, Weymouth, Bridport, and Lyme Regis being coastal resorts. Quarrying is another important industry. The white freestones of Portland have been used in buildings all over the world, particularly in London, and the white pipe-clay of E. Dorset is in great demand by the pottery industry. Purbeck is famed for its marble. Bridport is noted for the manuf. of rope, twine, and net. Gillingham and Sherborne stand on the former S. main railway line connecting London and Exeter; Poole, Warcham, and Dorchester stand on the former S. main line running from London through Southampton and Bournemouth to Weymouth. Dorchester is also on the former Great W. main line from London to Weymouth through Reading and Yeovil. Wimborne Minster, Blandford Forum, Swanage, Portland, Bridport, and Lyme Regis are served by branch lines. Poole, Weymouth, and Bridport are the chief seaports. Wimborne Minster, the abbey church of Sherborne, the fine ruins of Corfe Castle, and the prehistoric earthwork Maiden Castle all possess considerable antiquarian interest. The co. is also interesting geologically, and remains of immense reptiles have been unearthed at Lyme Regis. The total acreage of the co. is 622,813; pop. 299,360. See A. de Selincourt, *Dorset*, 1947.

Dorset, Charles Sackville, Earl of Middlesex, 6th Earl of Dorset (1638-1706), courtier, son of the 5th earl, whom he succeeded in 1677. The early part of his career was spent in pleasure and dissipation at Charles II's court. He had no prominent place at court during the reign of James II, but was reinstated on the accession of William III. He was a patron of poets and dramatists, and wrote verse himself; but the only lyric by which he is remembered is 'To All You Ladies now on Land,' said to have been written before the battle of Marston, 1665.

Dorset, Thomas Sackville, 1st Earl of (1536-1608), poet and statesman, b. Buckhurst, Sussex, son of Sir Richard Sackville, chancellor of the exchequer. Educ. at Oxford and Cambridge, he studied law at the Inner Temple, and while there wrote, in conjunction with Thomas Norton (q.v.), *Ferrex and Porrex*, afterwards called *Gorboduc*, 1561-2, the first regular Eng. tragedy. A little later he planned *The Mirror for Magistrates*, which was to have been a series of narratives of distinguished Englishmen, somewhat on the model of Boccaccio's *Falls of Princes*. Finding the plan too large, he handed it over to others—7 poets

in all being engaged upon it—and himself contributed only 2 poems, one on Buckingham, the confederate and afterwards the victim of Richard III, and the other an 'Induction' or introduction, which has been described as the best poem between Chaucer and Spenser. These 2 pieces are distinguished by strong inventive and imaginative power and a stately and sombre grandeur of style. D. played a prominent part in the hist. of his time and held many high offices, including those of lord steward and lord treasurer. He was created earl in 1604. See J. Swart, *Thomas Sackville*, 1948.

Dorsetshire Regiment, The, formerly the 39th and 54th Foot. The 39th was raised in 1702, and after service in Europe went to India in 1754, being the first royal regiment to serve in that country, a fact which is commemorated in its motto 'Primus in India.' The 54th was raised in 1755. Towards the end of the 18th cent. Wm Cobbett was a sergeant-major in the 54th. The D. R. has a long roll of battle honours, and its battalions served on many fronts during the First World War. The 2nd Battalion was with Gen. Townshend at Kut-el-Amara, and was taken prisoner at its fall; another 2nd Battalion was raised to take its place. In the Second World War the D. R. fought in NW. Europe, taking part in the Battle of Normandy and the advance to the Rhine. Other units were part of the Brit. forces in Burma. The D. R. will be amalgamated with the Devon Regiment by 1959.

Dorsten, Ger. tn in the *Land* of N. Rhine-Westphalia (q.v.), on the Lippe, 32 m. N. by E. of Düsseldorf (q.v.). Pop. 9000.

Dorstfeld, Ger. tn in the *Land* of N. Rhine-Westphalia (q.v.), a NW. suburb of Dortmund (q.v.).

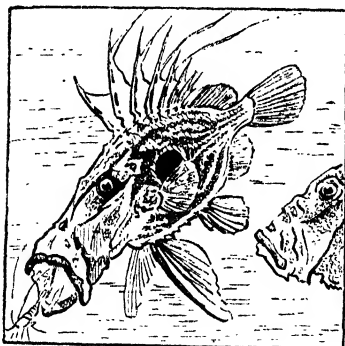
Dort, see DORTRECHT.

Dortmund (anc. Throtmanni, Trotmunde), Ger. industrial city in the *Land* of N. Rhine-Westphalia (q.v.), on the Emscher, 37 m. NE. by N. of Düsseldorf (q.v.). It is first mentioned in the 9th cent., and it became a free city of the empire and an important member of the Hanseatic League (q.v.). Its fortunes declined with those of the League and at the beginning of the 13th cent. it was only a small prov. tn. It rose to importance again with the development of the coal and iron industries of the Ruhr (q.v.) basin in the middle of the 19th cent. and the construction of the D.-Ems canal (q.v.). During the Second World War the city was badly damaged by bombing: in Mar. 1945 more than 5000 tons of bombs were dropped on D. in one of the biggest daylight air attacks of the war—an attack in which 1000 aircraft of the R.A.F. took part; other attacks were those of 23 May 1943, 29 Nov. 1944 (by day), 20 Feb. 1945 (at night). Since the end of the war there has been much reconstruction, and whole dists. have been rebuilt. The city has 3 notable churches—the *Marienkirche* (c. 1175), the *Reinoldikirche* (1250), and the *Propsteikirche* (1354)—all of which suffered

damage in the war. There are sev. technical institutes, including the Social Research Institute of the univ. of Münster, and there are important museums. The Westphalia Hall is the largest hall in Europe, and there is a vast stadium. The canal port has 10 harbour basins. The prin. industries are coal, steel, engineering, and brewing. Pop. 609,500.

Dortmund-Ems Canal, canal in Germany, which, beginning at Dortmund (q.v.), connects the Ruhr region, via Münster, with the N. Sea port of Emden (q.v.). Between 1892 and 1899 the R. Ems was canalised for 43 m., and this was the nucleus of the present canal (169 m. long, 108 m. of which were excavated). The canal has a width of 98½ ft at the surface, 59 ft at the bottom, and a depth of 8 ft 2 in. The cost was about 3½ million pounds. The R.A.F. frequently damaged the canal in the Second World War.

Dory, or **John Dory**, the *Zeus faber*, a species of *Zeidae* allied to the boar fish



JOHN DORY

(*Capros*) (q.v.). It is a marine fish found in temperate seas of the Atlantic, and is valued highly as a food. The body is laterally compressed and about 1½ ft in length, and the general appearance is very unprepossessing. During the breeding season it utters curious sonorous noises. J. D. is probably from the Fr. *jaune dorée* (yellow gilded), a reference to the metallic lustre of the fish.

Dos Passos, **John Roderigo** (1896-), Amer. novelist and playwright, b. Chicago. Educ. at Harvard, he served with the Medical Corps in the First World War, and wrote 2 'debunking' novels, *One Man's Initiation*—1917, 1920, and *Three Soldiers*, 1922. Others of his novels are *Streets of Night*, 1923, and *Manhattan Transfer*, 1925; the trilogy *U.S.A.*, made up of *The 42nd Parallel*, 1930, 1919, 1932, and *The Big Money*, 1936; and the trilogy *District of Columbia*, comprising *Adventures of a Young Man*, 1939, *Number One*, 1943, and *The Grand Design*, 1949. His plays include *The*

Garbage Man, 1926; *Airways Inc.*, 1929; and *Fortune Heights*, 1933. *State of the Nation*, 1944, and *Tour of Duty*, 1946, are collections of essays; and he also wrote sev. unconventional travel books, as well as *The Head and Heart of Thomas Jefferson*, 1954.

Dōsah (Arabic, 'treading'), a religious ceremony performed by the dervishes of the Sa'di order in Cairo. The chief, or sheikh, of the order rode on horseback, allowing his horse to tread upon the bodies of the dervishes who were lying down, and who were said to be unharmed by the hoofs of the animal. The ceremony was abolished in 1881.

Dospad Dagh, see RHODOPE MOUNTAINS.

Dossaret, in Byzantine architecture, a stone block (often carved) resting on the top of a capital in an arcade; and helping to distribute the superincumbent weight of an arch or a pair of arches.

Dossi, **Dosso** and **Battista**, brothers, and painters of the 15. school. Battista, D. (d. c. 1548), who worked with his brother, was the landscape painter, while Giovanni di Nicolo di Lutero (c. 1479-1542) (real name of D. D.) painted the figures. Both these brothers seem to have been pupils of Lorenzo Costa, and they also spent some time in Venice together and probably also in Rome. These painters, whose work is notable for its beautiful colouring and originality, are mentioned by Ariosto in his *Orlando Furioso*. Many of their paintings are in the gallery at Ferrara and in the palace there, as they were employed by the duke. 'Muse inspiring a Court Poet' (National Gallery) is one of D. D.'s notable works.

Dost, **Mohammed** (c. 1798-1863), supreme ruler of Afghanistan from 1818 to 1839 and again from 1843 to 1863. See AFGHANISTAN.

Dostoyevskiy, **Fëdor Mikhaylovich** (1822-81), great Russian author and thinker, one of the greatest novelists in world literature, b. Moscow, son of a doctor. He suffered all his life from epilepsy, which he described in *The Idiot*. His other handicap was his passion for gambling, which he also pictured brilliantly in *The Gambler*, 1864. He went to the St Petersburg engineering school, but his love for writing was greater than his desire to be an army officer. His first pub. work, a long story *Poor Folk*, 1846, was applauded by the Radical critics. In 1849 he was arrested for alleged association with a secret revolutionary socialist society; he was sentenced to death, and endured a horrible moment expecting to be shot (described in *The Idiot*), but was reprieved and sent to a penal colony in Siberia. Four years spent among criminals and political prisoners furnished material for his *Notes from the Dead House*, 1861-2. The first truly 'Dostoyevskian' work was the *Letters from the Underground*, 1864. During the later 1860's and the 70's, when he wrote his great novels *Crime and Punishment*, 1866, *The Idiot*, 1868, *The Possessed*, 1871-2, and *The Brothers Karamazov*, 1880, D. was struggling almost constantly with poverty. Like Balzac he

sat at his writing-table penning immortal novels in the endeavour to keep the wolf from the door. As a publicist (in his own magazines *Time* and *Epoch*, 1861-5, in the Conservative weekly *The Citizen*, 1873-4, and in *The Diary of a Writer* pub. as separate vols., 1876-81) D. represented an original 'soil-bound' trend—national, democratic, and Christian. He spent sev. years in W. Europe, and his observations pub. in 1863 in *The Diary of a Writer* present a combination of Russian nationalism and messianism with a sincere love for the treasury of European civilisation. A few months before his death, in 1880, D. delivered a famous speech at the opening of Pushkin's monument in Moscow on the destiny of Russia and of the Russian intelligentsia. D.'s works have considerably influenced the further development of literature both in Russia and abroad, and have an enormous influence on modern thought. As an artist he was one of the creators of the 'psychological novel.' As a psychologist he was mostly interested in extreme conditions and situations and in the Russian national character. Nietzsche, not given to praise, said he was the only man who had taught him something of psychology. But his most profound contribution is in the field of religious and social thought. Here, apart from the special subject of the working of the Russian popular mind, he concentrated on the central problems of freedom and of the destiny of man. He was the greatest antagonist of atheistic humanism and is the inspirer on one hand of existentialism, and on the other of Christian personalism and solidarism. See his novels, trans. by C. Garnett (12 vols.), 1912-20. The literature about D. is vast. See studies by D. S. Merezhkovski, 1902; J. Lavin, 1920; J. Middleton Murray, 2nd ed., 1923, A. Gide, Eng. trans. 1925. See also H. de Lubac, *The Drama of Atheist Humanism*, 1949.

Dot, in music, is a mark which is placed after a note and increases its duration by one half. When the D. is placed over the note it indicates a short staccato tone.

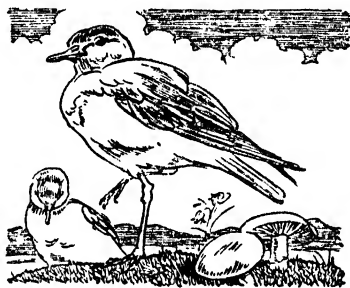
Dothan, city of Henry co., Alabama, U.S.A., about 120 m. S.E. of Montgomery. It has iron-works and cotton mills and many diverse manufactures. Pop. 21,600.

Dotterel, or *Eudromias morinellus*, a limicoline bird of the plover family, or Charadriidae. Its home is N. Europe and Asia, but in Britain, e.g. in the Lake District and the Scottish mts, it is approaching extinction owing to the custom of shooting the birds during the breeding season to ensure the delicacy of their flesh. The general colour is ashy-brown, with white and black markings, and the 3 eggs, which are laid in hollows of the ground, are pale green with brown marks.

Dou, Dow, or Douw, Gerrit or Gerard (1613-75), Dutch genre painter, b. Leyden. At an early age he became a pupil of Rembrandt, from whom he acquired the art of beautiful colouring. His pictures reveal his close study of nature and are remarkable for their delicacy and finish. They number in all about 200, 'The Woman

with the Dropsy,' in the Louvre, being his masterpiece. Other well-known works are 'The Poulterer's Shop,' and 'Self-Portrait,' in the National Gallery.

Douai, Fr. tn, cap. of an arron., in the dept of Nord, on the Scarpe and the Sensée canal. Its site has been occupied since Rom. times. In 1529 it came into the hands of Spain. It was taken by Louis XIV in 1667, by Marlborough in 1710, and was returned to France in 1713. Its univ. (1562) was removed to Lille in 1887. The great college for Eng. Rom. Catholics, founded at D. by Wm Allen (q.v.) in 1568 (removed to Rheims 1578-1593), came to an end at the Fr. Revolution, and was refounded in England at Ushaw and Ware; it was in this college that the Rheims-D. Bible (see BIBLE) was prepared. D. had also Eng. Franciscan and



DOTTEREL

Benedictine foundations, and Irish and Scots colleges (see also DOUAI SCHOOL; DOWNSIDE SCHOOL). The tn suffered greatly in both world wars. There is a 15th-cent. to hall, and there is a splendid 14th-15th-cent. belfry (210 ft). D. is the seat of a court of appeal, and has a mining school and art institutions. There are iron, steel, coal, chemical, and engineering industries. Pop. 37,500.

Douai School, public school for boys attached to the Eng. Benedictine Abbey of St Edmund, K.M., which was founded in 1615 in Paris, transferred to D., France, in 1818, and to Woolhampton, Berkshire, in 1903. The Junior School is, since 1948, at Ditcham Park, Petersfield.

Douala, tn and harbour in Fr. Cameroons, W. Africa, on the Vouri R. There is a railway from D. to the new cap. Yaounde. It has many modern buildings and institutions, and is the most important port of the Cameroons for palm oil products. In the First World War it was captured by the Brit. forces on 26 Sept. 1914. Pop. (1955) 110,000.

Douarnenez, fishing tn of W. France, in the dept of Finistère, and the arron. of Quimper. The sardine and mackerel fisheries are important. Other industries are boat-building and net- and rope-making. Pop. 20,600.

Douaumont, Fr. vil. in the dept of Meuse, 5 m. N.E. of, and containing the

first of the outlying permanent forts of Verdun. In the First World War the fighting here in 1916 was a vital part of the epic defence of Verdun (see VERDUN, BATTLE OF, 1916).

Double-Bass (music), see VIOLIN.

Double Bassoon, see BASSOON.

Double Entry, see BOOK-KEEPING.

Double-flower may consist of (a) a flower in which the petals are increased in number; and (b) flower-head in which disk-florets are replaced by ray-florets or themselves greatly enlarged. Doubling is common in cultivated flowers, but less frequent in nature. The constitutional cause is unknown, but doubling may result from transformation of stamens and carpels into petals, or development of sepals and petals instead of stamens and carpels, in which cases the flowers are sterile; or from multiplication or branching of petals, with stamens or carpels unaltered.

Double Refraction, name applied to the splitting up of a ray of light incident on a crystal of calcite into 2 refracted rays. The phenomenon was first described by Erasmus Bartholinus in 1669, who was led to its discovery by observing that when objects were viewed in certain directions through transparent crystals of Iceland spar 2 images of each object were seen. If a pencil mark is made on a sheet of white paper and a crystal of calcite is placed upon it, 2 images of the pencil mark are seen. On rotating the crystal, one image remains stationary while the other revolves in a circle about it. The stationary image is called the ordinary image, while the moving image, which is always displaced in the direction of the shorter axis of the rhombic face of the crystal, is called the extraordinary image. When a beam of light falls obliquely on a crystal of calcite the 2 rays into which it divides are called the ordinary ray and the extraordinary ray. The ordinary ray obeys the laws of refraction in the usual way, but the extraordinary ray departs from the plane of incidence, and the ratio of the angles of incidence and refraction which it makes with the face of the crystal is not constant. The 2 refracted rays are found to be polarised in perpendicular planes. See POLARISATION.

Double Vision, see EYE.

Doubleday and Company, Inc., Amer. publishing firm, largest book publishing organisation in the world, founded in 1897 by F. N. Doubleday and publishing in New York City, with offices in New York, Garden City (Long Is.), San Francisco, Toronto, London, and Paris, and its own manufacturing plants in Hanover, Pennsylvania, and Berryville, Virginia. The company publishes, manufs., and distributes books to retail stores throughout the U.S.A., distributes books by mail order to sev. million book-club members, and operates its own nation-wide chain of over 30 book stores (which also sell books of other publishers). The company publishes original non-fiction and fiction for both adults and children by many distinguished world-famous writers. *Anchor Books*, a series of inexpensive

paper-bound books for the educ. reader, and *Image Books*, paper-bound books specially designed for inspirational reading, are among the pubs. of this company. D. has its own serialisation dept and a Catholic text div.

Doubling the Cube, problem which originated in early Gk times, and was one of the 3 great problems studied by the early mathematicians. Hippocrates, Archytas, and others solved the problem, though its solution could not be obtained by simple geometry, but necessitated a more advanced knowledge. There are various traditions as to how the question arose, one concerning an attempt of the Delians to double a cubical altar, so that it is sometimes known as the Delian problem.

Doublings, heraldic term applied to the linings of state robes, mantles, or mantlings.

Doubloon (Sp. *doblon*, double), gold piece, once coined in Spain and Sp. America, worth 2 pistoles. Up to 1848 its value was £3 4s. 8d., but the 'Doblon de Isabel,' which entered the currency in that year, was worth only 100 reals.

Doubs, dept on the E. frontier of France, formed of part of the anc. prov. of Franche-Comté. It falls naturally into 3 regions. The plains between the Ognon and the D. are very fertile, and produce wheat, oats, and other cereals, as well as vegetables, hemp, fruits, and vines. The central plateau is mostly given to pasturage, and the mountainous dists., crossed by 4 parallel chains of the Jura, are thickly wooded. There is considerable industry, the prin. manufs. being machinery, artificial silk and other textiles, clocks and watches, hardware, foodstuffs, and wine. There are rock-salt deposits, and building-stone. The prin. tns are Besançon (the cap.), Montbéliard, and Pontarlier (qq.v.). Area 2052 sq. m.; pop. 327,200.

Douce, Francis (1757-1834), antiquary, pub. his curious *Illustrations of Shakespeare* in 1807, and his *Dance of Death* in 1833. A contributor to *Archæologia* and the *Gentlemen's Magazine*, he bequeathed at his death a valuable collection of books, illuminated manuscripts, coins, etc., to the Bodleian Library.

Doughty, Charles Montagu (1843-1926), traveller and author, son of a clergyman, b. Therberton Hall, Suffolk. Educ. for the navy, and, later, at King's College, London, and at Cambridge Univ. He travelled widely in 3 continents, Europe, Africa, and Asia. His most memorable journey, begun in 1876, was through parts of Arabia unexplored by Europeans up to that time. Author of *Travels in Arabia Deserta*, 1888, and much poetry of an austere vein, his best-known work being *The Dawn in Britain*, 1906. Other vols. of poetry were *The Cliffs* (a play in verse), 1909; and *The Clouds* (a poetic drama), 1912. See D. G. Hogarth, *The Life of Charles M. Doughty*, 1928; B. Fairley, *Charles M. Doughty: A Critical Study*, 1927.

Douglas (Gaelic *dubh glas*, black water), name of a famous Scottish family. *William of Douglas* is the first one of this

family of whom anything definite is known, and of him there are records between the years 1175 and 1213. He was succeeded by his son, *Sir Archibald*, who *d.* about the middle of the 13th cent. *Sir William of Douglas* (*d.* 1298) ('le Hardi') was the grandson of the former. He rose against Edward I in 1297, for which he was imprisoned and *d.* in the Tower the following year. *Sir James of Douglas* (1286-1330), known as the 'Good' Sir James, was his son, and bore the title Lord of Douglas. During the life of Robert Bruce D. was his firm supporter, sharing the command at Bannockburn, and being successful in many border raids, till his name of 'Black D.' roused terror among the people. *William D.*, his son, *d.* at the battle of Halidon Hill, and *William D.*, 1st earl (1327-84), became owner of the estates through his uncle Hugh, was made earl of D. about 1358, and became earl of Mar by his marriage. His son, *James, Earl of D. and Mar* (*d.* 1388), succeeded him and fell at the battle of Otterburn. As there was no direct heir to the estates, *Archibald D.* (*c.* 1328-*c.* 1400), a natural son of Good Sir James, became the 3rd earl. He in his turn was succeeded by his son *Archibald* (*c.* 1369-1424), who was made a prisoner at the battle of Homildon Hill and at Shrewsbury. He afterwards became duke of Touraine, and was killed at the battle of Verneuil. His successor was his son *Archibald*, 5th earl (*c.* 1391-1439). *William*, his son and heir, was murdered with his brother in Edinburgh Castle, 1440, by order of Sir Wm Crichton. The estates then passed to *James D.*, their great-uncle, known as the 'Gross.' His son *William*, 8th earl (*c.* 1425-52), was murdered by James II in Stirling Castle, and *James* (1426-88), his brother, became the 9th earl. He at once went to war with James on account of the murder of his brother, but had to surrender. His brothers identified themselves with his cause, but were defeated by the earl of Angus, another branch of the D. family who were coming into prominence. The lands of the D. branch were given over to the 4th earl of Angus, known as the 'Red D.' *Archibald*, 5th earl of Angus (*c.* 1449-1514), called 'Bell-the-Cat,' was succeeded by *Archibald* (*c.* 1489-1557), his grandson, who married Margaret, sister of Henry VIII, king of England, and their daughter Margaret was the mother of Lord Darnley, father of James VI. His successors were *David*, 7th earl, and *Archibald*, 8th earl, the estates then passing to another branch, *William D. of Glenberrie*, 9th earl. In 1633 his grandson *William* (1589-1660), the 11th earl, was made marquis of D., and his son became the 3rd duke of Hamilton by his marriage. *James D.*, 2nd marquis (*c.* 1646-1700), and grandson of the 1st marquis, was succeeded by his son *Archibald* (1694-1761), 1st duke of D., but as he had no heirs the title *d.* with him. About the year 1760 one of the twin sons of Lady Jane D., sister of the duke, became the heir to the estates in spite of his right having formerly been disputed, and

in 1790 became baron D. of Douglas, being raised to the peerage. He was succeeded in turn by his 3 sons, and when the 4th baron D. *d.*, the earls of Home became the next heirs. The dukes of Hamilton, Buccleuch, and Queensbury, as well as the earls of Morton, Home, and Wemyss, are members of this family. See D. Hume of Godscroft, *The History of the House of Douglas and Angus*, 1644; and H. Maxwell, *History of the House of Douglas*, 1902.

Douglas, Lord Alfred Bruce (1870-1945), poet, *b.* Worcester, 3rd son of the 8th marquess of Queensbury. He was educ. at Winchester and Magdalen College, Oxford. In London he became known as the close friend of Oscar Wilde and a member of his circle. In his *Without Apology*, 1938, and his *Oscar Wilde: a Summing Up*, 1940, he returned, with candour and generosity, to the subject of his former friend as if unable to rid himself of the obsession of the past. But when that is forgotten, it is probable that some of his literary work will be remembered with the best that has been written by his contemporaries. His serious verse is seen at its best in his sonnets, and he also wrote some of the best nonsense verse in the Eng. language—*Tales with a Twist* and *The Placid Pug* are typical of this verse. His first book of poetry was *The City of the Soul*, pub. in 1899. Twenty-five years later came his *In Exercisio*, 1924, written in prison as was its counterpart Oscar Wilde's *De Profundis*. This work seems to show that great poetry was within his powers but that he did not use them. See W. Freeman, *Lord Alfred Douglas*, 1948.

Douglas, Sir Andrew Snape (1761-97), naval officer. In 1781 he commanded the *Chatham* and captured over 50 Fr. vessels. He was appointed flag-capt. of Lord Howe's flag-ship the *Queen Charlotte*, and was dangerously wounded on the 'glorious first of June,' 1794. He recovered sufficiently to take part in the victory off L'Orient in the following year, but *d.* 2 years later.

Douglas, Sir Charles (*d.* 1789), rear-adm. Made commander in 1759, he was sent out to defend Quebec in 1776, and was present at the battle of Ushant in 1778.

Douglas, David (1798-1834), traveller and botanist, *b.* Scoon, Perthshire. He was originally a gardener, but in 1825 went to the U.S.A. on a commission for the Royal Horticultural Society, and on his second journey to America about 2 years later he made sev. discoveries of plants, among them the tree named after him as D. Fir (*q.v.*), and *Douglasia*.

Douglas, Gavin, or Gavin (*c.* 1474-1522), prelate and poet, *b.* Tantallon Castle, N. Berwick, son of the 5th earl of Angus, nicknamed Archibald 'Bell-the-Cat.' He was educ. at St Andrews for the Church. Promotion came early; in 1501 he was made provost of St Giles, Edinburgh, and in 1514 abbot of Aberbrothock and archbishop of St Andrews. But the times were troublous, and he had hardly received these latter preferments when he was deprived of them. He was, however, named bishop of Dunkeld, and after some

difficulty and undergoing imprisonment was confirmed in the see. In 1520 he was again driven forth, and 2 years later *d.* of the plague in London. His prin. poems are *The Palace of Honour* and *King Hart*, both allegorical; but his great achievement was his trans. of Virgil's *Aeneid* in 10-syllabled metre, the first trans. into Eng. of a classical work. D.'s language is more archaic than that of some of his predecessors, his rhythm is rough and unequal, but he had fire and a power of vivid description, and his allegories are ingenious and felicitous. His poetical works were ed., with a life, by J. Small, 1874. See also L. M. Watt, *Douglas's Aeneid*, 1920.

Douglas, George (Scottish writer), see BROWN, GEORGE DOUGLAS.

Douglas, George Norman (1868-1952), author, *b.* Tilquhillie, of Scottish and Ger. ancestry. Educ. at Uppingham and Karlsruhe, he spoke and wrote Eng. and German with equal fluency. After 2 years in the diplomatic service he went to Italy and finally settled at Capri. *Siren Land*, 1911, *Fountains in the Sand*, 1912, and *Old Calabria*, 1915, are travel books, but it was his novel *South Wind*, 1917, which made him famous; other novels are: *They Went*, 1920; *Alone*, 1921; and *Together*, 1923. *Looking Back*, 1933, and *Late Harvest*, 1946, are autobiographical.

Douglas, John Sholto, see QUEENSBERRY, MARQUESS OF.

Douglas, Lloyd Cassel (1877-1951), Amer. novelist, *b.* Columbia City, Indiana. Till middle life he was a Lutheran minister, but then retired to devote himself to writing. *Magnificent Obsession*, 1929, his first book, and *Foraie Us Our Trespasses*, 1932, both great successes, were followed by *Precious Jeopardy*, 1933; *Green Light*, 1935; *White Banners*, 1936; *Disputed Passage*, 1939; *Invitation to Live*, 1940; *The Robe*, 1942; *Home for Christmas*, 1949; and *A Time to Remember*, 1951.

Douglas, O., pseudonym of Anna Buchan (1-1948), novelist, *b.* Kirkealdy. The daughter of a Free Church minister, and sister of John Buchan (q.v.), she was educ. at Hutcheson's Grammar School, Glasgow, and Glasgow Univ. From 1906 onwards she was mistress of the family home in Peebles, the Priorsford of her books. Her first novel, *Olivia in India*, 1913, written after a visit to her brother Wm, who was in the Indian civil service, was followed by *The Scots*, 1917, a delightful picture of Glasgow suburban life. Others of her novels are: *Penny Plain*, 1920; *Ann and her Mother*, 1922; *Pink Sugar*, 1924; *Eliza for Common*, 1928; *The Day of Small Things*, 1930; *Priorsford*, 1932; and *The House that is Our Own*, 1940. *Unforgettable*, *Unforgotten*, 1945, is an autobiography.

Douglas, Stephen Arnold (1813-61), one of the greatest Amer. statesmen and orators of his time, *b.* Brandon, Vermont, 23 April. Son of a doctor, he studied law and settled in the state of Illinois, and soon became a leader in the Democratic party. In 1836 he entered the state legislature, in 1840 became the state's secretary, and in

1843 was elected congressman. Four years later he was elected to the U.S. Senate, and remained there until his death. He was the hero of the slave-holding states in the political struggles prior to the Amer. Civil war. Stood for the presidency when Lincoln was elected. Was a leader in the W. states. In the Senate, however, D. superbly defended Lincoln's inaugural address and went to the White House and pledged Lincoln his support. In the last great speech of his life, which he made at Columbus, Ohio, on his way to Washington, he declared that the union must be preserved at all costs. *D.* *d.* in Chicago. See life by Allen Johnson, 1908.

Douglas, Sir William Fettes (1822-91), painter, *b.* Edinburgh. From 1877-82 he was curator of the National Gallery of Scotland, and in 1882 he became president of the Royal Scottish Academy. He was knighted in 1882. Among his best works are: 'The Alchemist,' 'The Rosierucians,' and 'A Fishing Village.'

Douglas: 1. Cap. of the Isle of Man, and a popular seaside resort, situated 80 m. NW. of Liverpool and 62 m. WNW. of Fleetwood, with both of which it is in regular steamer communication. D. has grown up round a splendid bay in the E. of the is., at the confluence of the Avin-Dhoy and Avin-Glass. A fine esplanade circles the bay from Derby Castle on the N. to Douglas Head on the S., N. of which lies the harbour, the first in the world to be equipped with radar to aid navigation. D. is served by steamers crossing in the season to Heysham, Dublin, Belfast, and Glasgow; by trams, and by the Isle of Man railway, connecting it with Ramsey, Peel, Castletown, and Port Erin. It has public buildings (including the House of Keys), a free library, a Manx folklore museum, and a great number of attractions for its visitors, who exceed half a million from Easter to Oct. Pop. 22,000.

2. Vil. of Lanarkshire, Scotland, and, formerly, a place of some importance. It has a ruined castle (Scott's *Castle Dangerous*). The main occupation is mining; D. is also the depot of the Cameronians. Pop. 2,400.

Douglas Fir (*Pseudotsuga taxifolia*), a tall, evergreen tree native to W. N. America. It attains a height of 250 ft or more. The timber is one of the world's most important structural woods and it is exported in large quantities as lumber and as plywood. Once known as Oregon or Brit. Columbian Pine. See FORESTRY; TIMBER.

Douglass, Frederick (1817-95), Amer. journalist and orator. *B.* Tuckahoe, Maryland, he was at first brought up as a slave, his father being a white man and his mother a Negro slave, Harriet Bailey. In 1838 he managed to free himself by escaping from a shipyard in Baltimore, and he then assumed the name of D. After living at New York and then New Bedford, he was appointed a lecturer by the Anti-Slavery Society on account of his eloquence. He pub. the *North Star* on the abolition of slavery, and in addition

he filled some important offices, among them marshal for the dist. of Columbia and minister to Haiti. See autobiography, *The Life and Times of Frederick Douglass*, rev. ed. 1947.

Douglass, Sir James Nicholas (1826-98), engineer, b. London. After being apprenticed and holding one or two posts as an engineer, he became in 1862 chief engineer to Trinity House, his chief work being the designing of the new Eddystone Lighthouse of 1878.

Doukhobors, see DUKHOBORS.

Doullens, Fr. tn in the dept of Somme. It stands on the Authie to the N. of Amiens, and has a fine 16th-cent. church, and a citadel founded to Vauban. The tn was damaged in the Second World War. It has jute manufs. and mechanical engineering works. Pop. 5400.

Doulton, Sir Henry (1820-97). Eng. manufacturer of pottery and chinaware (q.v.). He founded his own factory at Lambeth, which continued to operate there until 1956, when it was transferred to the D. company's Teignmouth factory (though Lambeth continues to be the home of the company's head office). The wares bear the name 'Royal Doulton.'

Doom, see DOOM.

Doumer, Paul (1857-1932), Fr. statesman and colonial governor-general, b. Aurillac. He was a prof. of mathematics, and later a journalist, and became a deputy in 1888. Unsuccessful at the presidential elections of 1906, he was elected president in 1931. He was one of the makers of the Fr. colonial empire. Arriving in Indo-China in 1897 as governor-general, it was he who finally gave the colony a definite administrative structure, and his period of office there was outstandingly successful. He was president of France for only a few months, being assassinated by a Russian fanatic named Gorgoullov.

Doumer Bridge, steel road and rail bridge, 1837 yds in length, crossing the Red R. (q.v.) at Hanoi (q.v.). Originally constructed only as a railway bridge and opened in 1902, it was later enlarged to carry a road as well. Neglected during the 1945-54 war, the bridge is now in poor condition.

Doumergue, Emile (1844-1937), Fr. theologian, b. Nîmes; studied theology in Geneva, Montauban, and Germany. Then made a special study of Calvinism and pub. vols. on Calvin, among which are: *L'Art et le sentiment dans l'oeuvre de Calvin*; *La Piété réformée d'après Calvin*; *Calvin le fondateur des libertés modernes*.

Doumergue, Gaston (1863-1937), Fr. statesman, and president of the Fr. Rep. 1924 to 1931; b. at Aigues-Vives, the son of a farmer. He was educ. at the lycée, Nîmes; practised as barrister and became a magistrate first in Cochín China, and then in Algiers. D. was elected deputy for Gard, 1893; became secretary of the chamber of deputies, 1895-6; colonial minister, 1902, 1905; vice-president of the chamber, 1905-6; minister of commerce, industry, and labour, 1906-8; of education, 1908-10; and premier in 1913. On the outbreak of war he was colonial

minister in Viviani's cabinet. He had the distinction of being the first Protestant president of the Fr. Rep., and he became premier again in 1934, after the Stavisky riots, but resigned after his suggestions for parl. reform had met with hostile criticism.

Doune, burgh of Perthshire, Scotland, on the R. Teith. It lies to the NW. of Stirling and contains the well-preserved ruins of its castle, built in medieval times. The old bridge was erected by the tailor of Princess Margaret of England, afterwards queen of James IV. Pop. 820.

Dour, tn in the prov. of Hainaut, Belgium, 10 m. SW. of Mons. There are coal-mines in the vicinity. Pop. 11,600.



Topical Press

GASTON DOUMERGUE

Doura, ruined tn on the banks of the Euphrates, founded 300 BC, but abandoned after the destruction of Palmyra in AD 273. Brit. troops discovered here in 1920 paintings of the 2nd and 3rd cents., and excavations were made by the Fr. Académie des Inscriptions, which revealed the plan of the fortress, the streets, the temple of the Palmyrian gods, frescoes, sculptures, and inscriptions.

Doura, see DURRA.

Douro (Spanish Duero; anct Durius), riv. of Spain and Portugal, the 3rd largest in the peninsula. It rises in Spain, on the S. side of the Peña de Urlión in the prov. of Soria, and, after flowing E. and S. through the tn of Soria (q.v.), turns and flows W. across the Castilian plateau. For some 65 m. it forms the Sp.-Portuguese frontier, and it reaches the Atlantic at São João da Foz, 3 m. below Oporto (q.v.). Rapids, and a sand-bar at the mouth, make it generally unsuitable for navigation, but it is used by some small craft. It is now being utilised for hydro-electric power. Part of its valley is

famous for the vineyards from which port wine (q.v.) is produced. Length 480 m.

Douro Litoral, prov. of NW. Portugal, with a coastline on the Atlantic. It is crossed E.-W. by the broad valley of the Douro (q.v.), and is mountainous in the S. and NE. Its chief product is wine, especially port. The prin. tn is Oporto (q.v.). Area 1268 sq. m.; pop. 1,237,200.

Douroucouli, popular name for *S. Amer.* monkeys of the genus *Nyctipithecus* in the family Cebidae. The incisors in the lower jaw project forwards, and the eyes of the monkeys are large, both of which features give them a lemurine appearance. They are unlike many of their allies in having the long tail non-prehensile.

Douw, Gerard, see *Dotu*.

Dove, riv. of England, rising in Axe Edge, Derbyshire, 4 m. from Buxton, and flowing S. for 40 m. to join the Trent near Burton. It forms the SW. border of Derbyshire, separating the co. from Staffordshire. Trout abound in its waters, and it was well-known to Isaac Walton and to the Lake poets. The valley of Dovedale, below Hartington, where the riv. runs through a narrow rocky gorge some 2 m. long, thickly wooded and with an abundance of wild flowers, is particularly beautiful.

Dove, see *PIGEON*.

Dove, Ring, see *WOON-PIGEON*.

Dover, Thomas (1664-1742), physician and buccancer, b. Warwickshire. He qualified in medicine at Cambridge, 1687, settled in Bristol, and after some years in practice sailed in a privateer for the S. Seas (1708). At the is. of Juan Fernandez he found and rescued Alexander Selkirk, the original of Robinson Crusoe, who had been alone there for 4 years and 4 months. On his return in 1711 D. practised first in Bristol and later in London, where he d. He is remembered for his famous *Dover's powder* (opium and ipecacuanha). He wrote *The Ancient Physician's Legacy to his Country*, 1732.

Dover: 1. One of the 5 Cinque ports, bor., mkt tn, and holiday resort in the co. of Kent, England. It is situated in a breach between high chalk cliffs on the NW. side of D. Straits. It is 21 m. distant from Cap Gris Nez on the opposite side of the Eng. Channel, and lies 72 m. to the ESE. of London. The dominant feature of the tn is its castle, with an altitude of 375 ft above sea-level, which includes in its grounds a Rom. lighthouse, the ancient cruciform church of St Mary-in-Castro, a massive Norman keep now used as a bomb magazine, and barracks for 200 men. The prospect from the keep includes, on a clear day, the Fr. coast from Boulogne to Gravelines, and the cliffs from Folkestone to Ramsgate, together with the many elaborate fortifications which honeycomb the D. cliffs on either side. D. College has been built round the fine remains of the 12th-cent. St Martin's priory. The harbour is divided into 3 main areas of a total of 610 ac., incorporating the Outer Harbour, the seaward boundary of which is the S. Breakwater 400 ft in length, the W. Docks, and the E. Docks. The W. Docks include the Admiralty Pier from

which the cross-channel services principally operate, the Prince of Wales Pier, the Brit. Railways train ferry dock, and the tidal basin with the Granville and Wellington Docks. The E. Docks comprise the camber and berths at the E. Arun as well as the industrial land area. A modern reception hall with filling stations and a ramp for facilitating the embarkation and disembarkation of continental motor car traffic has recently been constructed at the E. Docks. The D. routes to the Continent *via* Calais, Dunkirk, Boulogne, and Ostend are popular. The steamer crossing to Calais takes little over 1 hr. There is a pilot station (75 pilots) and a lifeboat station. The bor. boundaries were last extended in 1950. During the Second World War D. was one of Great Britain's 'front-line' tns, being repeatedly shelled from the coast of France by the Germans in addition to considerable aerial bombardment. The bor. council, having been granted authority to acquire 26 ac. of 'blitzed' sea-front by compulsory purchase, propose to build blocks of 8-storied flats and hotels to replace the derelict boarding-houses. D. has ship-repairing, rope- and sail-making industries, besides her fisheries and traffic in dairy produce and general cargoes with France. Pop. 35,217.

2. Cap. of Delaware, U.S.A., and co. tn of Kent co., on Jones's Creek and the Philadelphia, Baltimore, and Washington railway, 40 m. S. of Wilmington. Besides being the centre of a fruit dist., D. has factories for canning fruit; its manufs. include hosiery, paint, and rubber products. Pop. 6223.

3. The oldest (1623) city in the Stafford co. of New Hampshire, U.S.A., on the Cocheco R., 68 m. N. by E. of Boston. It has textile mills and manufs. wood and leather products, machinery and monuments. It has a 17th-cent. garrison house. The univ. of New Hampshire is at Durham 5 m. SW. Pop. 15,870.

4. Tn of Morris co., New Jersey, U.S.A. It manufs. metal products, machinery, rock wool, clothing, and truck and dairy products. Picaatinny Arsenal and the U.S. Navy rocket experimental station are near by. Pop. 11,170.

Dover, Strait of (anc. *Frctum Gallicum*; Fr. *Pas de Calais*), narrow channel separating France and England, and joining the Eng. Channel to the N. Sea (q.v.). It is about 22 m. long, and at its narrowest points, from D. pier or from S. Foreland to Cap Gris-Nez, its breadth does not exceed 21 m. The S. of D. extends from Dungeness and Cap Gris-Nez in a NE. direction to S. Foreland and Calais; its greatest depth is not quite 180 ft. The geological formation of the channel bed points to the fact that at one time England was joined to the continent of Europe. The tides of the N. Sea and the Eng. Channel meet in the S. of D.; the prin. ports are D. and Folkestone (q.v.) on the Eng. shore, and Calais and Boulogne (q.v.) on the Fr.

Dover Patrol. On the outbreak of the First World War the D. P. formed part of

the E. Coast Naval Command, under the command of Adm. Ballard. Its duties were to prevent Ger. ships forcing their way into the Eng. Channel, and to inspect neutrals for contraband (q.v.). Soon after the war commenced it was made a separate command. Later on 'drifters,' i.e. vessels equipped with drift nets in order to catch submarines, and trawlers to sweep for mines were added to the patrol. Adm. Bacon was in command from 1915 to 1917, being succeeded by Vice-Adm. Keyes (later Adm. Lord Keyes). The work of the D. P. was very varied. Besides safeguarding the transport of troops to France, the patrol was engaged offensively against the Germans on the Belgian coast, and against their bases at Zeebrugge and Ostend; and in all 28 bombardments were carried out. Mines and mine net barrages were laid along the Belgian coast, a procedure which stopped enemy mine-laying in the Channel. Over 5 million troops were transported to France without a single casualty. From 1915 Commander Lambe (later Air Vice-Marshal Sir Charles Lambe) commanded the units of the Royal Naval Air Service of the D. P., and aeroplanes played an increasing part, as the war progressed, in the D. P.'s operations.

Dovercourt, holiday resort of Essex, England, situated at the mouth of the Stour estuary, S. of Harwich. There are 2 lighthouses guarding the entrance into Harwich Harbour and also marking the position of a sandbank. Good bathing is to be obtained at D. Pop. 10,000.

Dovey (or Dyfi), riv. of N. Wales, rising in Merionethshire and emptying into Cardigan Bay at Aberdovey. Length, 30 m.

Dovrejsfjell forms part of the mountainous tableland of Norway, being marked off by the valleys of the Sundul, Laagen, and Rauma, and by the fjords of Nordmøre. Precipitous, irregular spurs, attaining an elevation of 6000 ft, shut in the Rauma valley (well known to tourists as the Romsdal), but Snøhetta, a magnificent snow field, is the highest peak (7615 ft).

Dow, Lorenzo (1777-1834), Amer. Methodist preacher, b. Coventry, Connecticut. He went as a missionary to the Catholics in Ireland, and both in England and America attracted great audiences; he helped to found the Primitive Methodist society in England. D. was a strenuous opponent of the Rom. Catholics.

Dowager (O.F. *douage*, dower) meant originally a widow with a dower. First used in England of Catherine of Aragon, widow of Prince Arthur, it is now applied to all widows of high rank to distinguish them from their sons' wives.

Dowden, Edward (1843-1913), scholar and critic, b. Cork. He was educ. at Queen's College there, and at Trinity College, Dublin, where he had a brilliant record and in 1867, 4 years after he had graduated, was appointed prof. of Eng., a post which he held till the end of his life. He is chiefly remembered as a great Shakespearean scholar. *Shakespeare: his Mind and Art* appeared in 1875, and the *Shakespeare Primer* in 1877, and he also ed.

many of the plays. Others of his books are: *Studies in Literature*, 1878; *Transcripts and Studies*, 1888; and biographies of Southey, 1880, Shelley, 1886, Browning, 1904, and Montaigne, 1905. He was a close friend of Walt Whitman, and pub. some vols. of verse. See L. E. Marshall, *The Letters and Poems of Edward Dowden*, 1914.

Dowie, John Alexander (1847-1907), religious fanatic, b. Edinburgh, went at 13 to S. Australia. For a time a student at Edinburgh Univ., he returned to S. Australia and became minister of a Congregational church. Later on he claimed the power of being able to heal people by means of prayer, and went to the U.S.A. in 1888. At Chicago in 1896 he organised the 'Christian Catholic Church in Zion,' he himself being general overseer; and in 1901 he estab. Zion City on the shore of Lake Michigan. In 1903 and 1904 he visited England, where he did not meet with much encouragement, and in 1906 his prestige with his followers was lost after the revolt of Zion City. D. was popularly known by the title of 'Doctor,' and he himself claimed to be Elijah.

Dowlais, industrial community of Glamorgan, Wales, adjoining Merthyr Tydfil, of which it is a suburb. The site of the former famous D. Iron and Steel Works is now occupied by factories.

Dowland, John (1563-1626), lutenist and composer, b. (probably) London. According to Fuller's *Worthies* he was a native of Westminster. The greatest lutenist of his age, he held the position of court lutenist to Christian IV of Denmark at a salary of 500 dalers per annum, a sum equalling the salaries of the high officers of state. According to Henry Peacham (*Minerva Britannia*, 1612) D. was neglected in England, Peacham comparing him to a 'nightingale sitting on a briar in the depth of winter.' D. was recognised in his own country only in his old age when he was appointed one of the King's (Charles I) Musicians for the Lutes. His songs with lute accompaniment are the most accomplished of their kind and were pub. in many European centres. His *First Booke of Songes or Ayres of Fourc Partes with Tableture for the Lute* was pub. in 1597. Its success was immediate and 3 more vols. were called for between 1600 and 1613. All 4 books with 3 songs in 'The Musical Banquet' have been pub. in *The English School of Lutenist Song-writers* (ed. E. H. Fellowes). As a performer on the lute D. had no rival in Europe and his skill is celebrated in a sonnet by Richard Barnfield. His son Robert (1586-1641) succeeded him in his Eng. royal office.

Dowlas, coarse kind of unbleached linen. Exceedingly strong, it was used by workmen for their aprons and sometimes for their shirts. It is not used so much, however, in the present day, and is now generally applied to coarse cotton woven cloth with a 'linen finish' glaze.

Down, maritime co. with a coastline of 67 m., in N. Ireland, having an area of 609,439 ac. Belfast Lough, Dundrum and Carlingford Bays are spacious inlets

along the indented shores, but the largest is Strangford Lough, whose waters are studded with 260 islets. Slieve Donard reaches the highest altitude (2796 ft) in the Mourne Mts to the S. The Bann, the Lagan, the Quoile, and the Newry are the chief rivs., whilst the Newry Canal along the W. gives increased facilities for communication. Oats, potatoes, wheat, turnips, and flax are widely cultivated, whilst pigs, sheep, and cattle are reared. Linen, hosiery, woollens, leather, cattle, butter, eggs, corn, and granite are the prin. exports. The co. tn is Downpatrick (q.v.). Round towers, stone cairns, raths, and abbeys are among the antiquities of interest. Two members represent D. in the Imperial House of Commons and 8 in the N. Ireland Parliament. Pop. 241,151.

Downham Market, mrkt tn and urb. dist. of England, in the co. of Norfolk. It is situated on the Ouse, 11 m. SW. of King's Lynn, and has a large flour mill and malt houses. Pop. 2759.

Downing, Sir George (c. 1623-84), soldier and politician, educ. partly in England and partly at Harvard College. He returned to England about 1645, and became a scout-master-gen. in Cromwell's Scottish army, and a teller of the exchequer. D. was one of Cromwell's prin. advisers on foreign policy during the Protectorate, his mission being to try to bring about a union of all the European Protestant powers. After the Restoration he worked for Charles II, successfully bringing about the arrest of various regicides on the Continent, and was rewarded with a baronetcy, 1663. His greed and treachery led to his unpopularity even with those he served, though his abilities were undoubted. Downing St perpetuates his name.

Downing College, Cambridge, founded under the will (1717) of Sir George D. (1684-1749), had the grant of its charter delayed, owing to litigation, to 1800, when it became a constituent college of the univ. of Cambridge. The college maintains its traditional devotion to the encouragement of law and medicine.

Downing Street, off the W. side of Whitehall, London, deriving its name from Sir George D. (q.v.), the 17th-cent. politician who built the street. It is famous because it has been the official residence of the Prime Minister (at No. 10) since the time of Sir Robert Walpole. The chancellor of the exchequer resides at No. 11, and the Foreign Office is also in this street. See E. Jameson, *Ten Downing Street: the Romance of a House*, 1945.

Downpatrick, cap. of co. Down, N. Ireland, 28 m. SSE. of Belfast, is a tn of extreme antiquity, situated close to the SW. fringe of Strangford Lough. Though St Patrick founded the see in 440, the present cathedral (Protestant) is not older than 1790. Ships of 100 tons come up as far as Quoile quay, about a m. from the tn. The dun or rath of Keltar, extending over an area of 10 ac., is one of the best preserved in Ireland. D.'s race meetings attract visitors. The making of braces,

belts, and shirts forms the chief industries; cattle, pigs, corn, and potatoes the chief exports. Pop. 3800.

Downs, North and South, 2 ranges of rounded chalk hills (average height c. 500 ft above sea-level) situated in the S. and SE. of England, enclosing the valley of the Weald (q.v.). At their most W. point both N. and S. D. lie in Hants; the N. D. run through Surrey and Kent, ending in the S. Foreland; the S. D. cross Sussex and terminate in Beachy Head. The celebrated Southdown sheep are pastured on the D.

Downs, The, safe anchorage for ships, in the Eng. Channel (q.v.), 8 m. long by some 6 m. broad, between the N. and the S. Foreland, protected by the Goodwin sands, and scene of sea-battles between the Spanish and Dutch (1639) and the Brit. and Dutch (1666).

Downside School, Rom. Catholic public school for boys, founded at Douai about 1603 and attached to the Eng. Benedictine community of St Gregory. It moved to Acton Burnell, near Shrewsbury, at the Fr. Revolution, and settled finally at Downside, near Bath, in 1814. The preparatory school is at Worth Priory, Crawley.

Downnton, par., formerly a mrkt tn, in the co. of Wilts., England, situated on the Avon, 6 m. SE. of Salisbury. D. is of anc. origin, having been important in A.-S. times. The 'Moot' and earthworks of that period still remain. Cerdic, the Saxon, gained a victory here in 519. It sent 2 members to Parliament until 1832. Pop. 2000.

Downs, see DIVINING ROD.

Dowson, Ernest Christopher (1867-1900), poet, b. Kent. Educ. at Oxford, he spent much of his life in France, where his irregular habits undermined a constitution weakened by consumption and poverty. As a poet he ranks with the Fr. 'decadents.' His books of verse include: *Dilemmas*, 1893; *Verses*, 1896; and *Poems*, 1905. *The Pierrot of the Minute*, 1897, is a poetic drama.

Doxology, ascription of praise to God. D.s occur at the end of some of the N.T. epistles, and sometimes in the middle of an argument (e.g. the ends of Rom. and 2 Pet. and in Rom. ii. 36). The title is most frequently given to (1) the ascription 'Glory be to the Father and to the Son,' etc., repeated principally at the end of psalms and canticles. This is known as the Lesser D.; (2) the Trisagion or Tetractis taken from Isaiah vi. 3; (3) St Matthew's conclusion to the Lord's prayer, 'For Thine is the Kingdom,' etc.; (4) the Greater D., the *Gloria in Excelsis*, which occurs at the beginning of the Rom. Mass and the end of the Anglican Communion rite.

Doyle, Sir Arthur Conan (1859-1930), novelist, b. Edinburgh of an Irish Rom. Catholic family; his uncle and grandfather were both well-known artists. Educ. at Stonyhurst and Edinburgh Univ., he qualified as a doctor, and from 1882 to 1890 practised at Southsea. In 1882 he pub. *A Study in Scarlet*, an adventure story which introduced the

famous character Sherlock Holmes. A later Holmes novel was *The Sign of Four*, 1890, but he first became really famous with the pub. in the *Strand Magazine* of the *Adventures of Sherlock Holmes*, a series of short stories. Holmes and his friend and chronicler Dr Watson set the fashion for the detective story, the former being modelled on Dr Joseph Bell, under whom D. had worked as a surgeon. Later vols. of short stories on the same theme were *The Memoirs of Sherlock Holmes*, 1894, *The Return of Sherlock Holmes*, 1905, *His Last Bow*, 1917, and *The Case-Book of Sherlock Holmes*, 1927. Of full-length Holmes novels the most famous was *The Hound of the Baskervilles*, 1902. Among novels that D. wrote on other themes the best are *Micah Clarke*, 1889, and *Rodney Stone*, 1896, a boxing story. *The White Company*, 1890, and *Sir Nigel*, 1906, are historical romances with a strong appeal to the young, while *The Exploits of Brigadier Gerard*, 1895, recounts with humorous irony the adventures of a young Napoleonic officer. D. served as a doctor in the S. African war, and wrote a hist. of the conflict, *The Great Boer War*, 1900. In 1902 he was knighted. Later he created an amusing new character in the belligerent Prof. Challenger, who is the hero of the scientific romances *The Lost World*, 1912, and *The Poison Belt*, 1913. *Songs of Action* is a book of poems, and *Memoirs and Adventures*, 1924, contains his reminiscences. In his later years D. was deeply interested in psychic phenomena, and wrote a *History of Spiritualism*, 1926. See lives by J. Lamond, 1931; H. Pearson, 1943; and J. D. Carr, 1949. There is also an extensive literature dealing with Sherlock Holmes, who is treated as a real person. See also DETECTIVE STORY.

Doyle, Richard (1824-83), caricaturist, b. London, was the 2nd son of John D., also famous as a caricaturist. At 15 he pub. *The Fingington Tournament*, or, *The Days of Chivalry Revived*. In 1843, when *Punch* was 2 years old, he became a regular contributor, and much of his best work appeared in it, notably 'Manners and Customs of ye English', until in 1850 he retired, owing to the paper's attacks on Rom. Catholicism. He illustrated many books, among others Thackeray's *Rebecca* and *Kensha* and *The Newcomes*, Locker's *London Lyrics* and the *Bon Gaultier Ballads*. As an artist he was at his best in fantastic designs, for his fancy was unbounded, and in dainty elf-like designs such as those, by him, which formerly decorated the cover of *Punch*.

D'Oyly Carte, Richard (1844-1901), theatre manager. Beginning his career as a concert and lecture agent, at the age of 31 he became a theatrical manager, and it was in that capacity he became known to the world. In Mar. 1875 he produced at the Royalty Theatre, London, *Trial by Jury*, the first of the series of comic operas written by Sir W. S. Gilbert (q.v.) and composed by Sir Arthur Sullivan (q.v.). At the Opera

Comique he brought out *The Sorcerer* and *H.M.S. Pinafore*, and followed these with *The Pirates of Penzance* and *Patience*. All these were successful, and with the aid of Amer. tours the 3 men made, it is said, £60,000 a year. D. invested his share of the profits in the erection of the Savoy Theatre, where he put on the other Gilbert and Sullivan plays, nearly all of which had a long run. In 1891 D. opened the Eng. Opera House (now the Palace Theatre), London, but here he met with his first and only check. The venture was a failure, and the building was disposed of to a syndicate for music-hall purposes.

Dracaena, genus of Liliaceae, comprehends 40 species found in warm parts of the Old World. It was estab. by Linnaeus and named from one of the species yielding the resinous exudation known as dragon's blood. Often confused with *Cordylus*; *D. fragrans*, *D. godaefiana*, and *D. sanderiana* are grown under stove conditions. *D. draco*, the dragon-tree, which yields the red gum-resin, had a celebrated representative in Tenerife. This tree, which was blown down in 1868, was 15 ft in diameter, 70 ft in height, and was supposed to be about 6000 years old.

Drachenfels, peak (1055 ft) in the Siebengebirge (q.v.), Germany, on the Rhine, 8 m. SE. of Bonn. It is the steepest, though not the highest, mt. of the group. It is named 'the Dragon's Rock' from the legend that here Siegfried vanquished the dragon (see NIBELUNGENLIED). A castle, ruined since the Thirty Years' War (q.v.), stands on the summit.

Drachm, or **Dram**, see METROLOGY.

Drachma, in anc. Greece, a silver coin, equal in value to one-hundredth part of a mina and a six-thousandth part of a talent. Until Solon's day a D. was worth a little over a shilling, but the Attic D. was equivalent to about 9½d. in Eng. currency. The obol was equal to one-sixth of a D. In Athens the prin. coin in use was the tetradrachmon, worth 4 drachmae, having the head of Pallas engraved on one side, and the owl on the other. As a weight measure, 100 drachmae were again equal to 1 mina (almost a lb.). The Gk D. in modern currency is worth about 8½d. It is divided into 100 lepta. See also METROLOGY.

Drachmann, Holger (1846-1908), Dan. poet and novelist, b. Copenhagen. At first a painter of the sea, he constantly returned to this subject in his writings. He pub. his first poetry, *Digte*, in 1872, and his later verse includes *Daempede Melodier*, 1875; *Sangesnes Bog*, 1889; and *Broget nær*, 1901. D. has won a high place among the lyric poets of Denmark. He also wrote innumerable novels and stories of his travels and of the sea, as well as sev. melodramas. See P. V. Rubow, *Drachmanns Ungdom*, 1940, H. Drachmann 1878-97, 1945, and H. Drachmann *Sidste Aar*, 1950.

Dracina, Draconin, see DRAGON'S BLOOD. **Drackenstein Mountains**, chain of mts in the SW. of Cape Province, S. Africa. They extend N. and S. to a distance of 25 m. eastward of Cape Town.

Draco (7th cent. BC), Athenian statesman and lawgiver. He was the first codifier of the laws of Athens. Before his time the laws were unwritten and were administered by the Eupatridae. Tradition has always connected his name with a severity which has become proverbial in the word 'draconian.' Demades, the orator, declared that D.'s laws were 'written in blood,' for nearly every law-breaker suffered the penalty of death. It is now generally agreed by scholars that the constitution assigned to D. by Aristotle (*Athen. Polit.*) is not authentic. See also ATHENS; GREECE—History.

Draco (lizard), see FLYING DRAGON.

Draco ('the dragon'), constellation in the N. hemisphere. The star γ Draconis was used by Bradley in his discovery of the aberration (q.v.) of light from 1725 to 1728.

Dracontium, or **Dragon**, family Araceae, genus of tuberous Andean herbs, with huge, solitary leaves and hooded gaping spathe, reddish-purple within. *D. asperum*, *D. gigas*, and *D. carderi* are sometimes grown in warm greenhouses.

Draconculus, or **Dragon Plant**, family Araceae, genus of 2 rhizomatous herbs, *D. canariensis*, Canary Is., and *D. vulgaris*, Mediterranean, akin to Arum, and grown in water gardens.

Dra-el-Mizan, tn of Algeria in the arron. of Tizi-Ouzon, with marble quarries and cork manufs. Pop. 6740.

Draft, order written by the drawer to authorise the payment of a sum of money by some other person acting as an agent. These D.s are used in commerce between firms and in municipal affairs by corporations.

Drag, see CASTING.

Dragoman (Arabic *targuman*, interpreter), a man who acts as guide and interpreter where Arabic, Turkish, or Persian is spoken; more generally, one who acts as intermediary between Europeans and Orientals. The term was first used of diplomatic officials of the Turkish court, who were appointed owing to the Turkish Gov.'s dislike of using the language of any non-Moslem nation; these D.s had considerable importance. But the term is now applied very widely to interpreters attached to banks or business concerns, or even hotel touts.

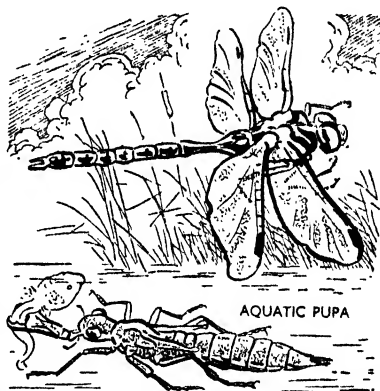
Dragon (Gk *drakon*, the seeing one; Lat. *draco*; Fr. *dragon*), in almost all mythologies typical of the power of evil, hence the great work of the heroes was to kill the D. To the Chinese, however, the D. is a benevolent monster. The conception of its shape varied, but generally was a winged serpent or crocodile, able to breathe fire. In Gk mythology the hydra, or monster with 9 heads, was slain by Heracles, while other heroes also slew D.s. So too with the heroes of N. mythology, among them the god Thor, Siegfried in the *Nibelungenlied*, and Beowulf. D.-slaying is also found in later Gk romances and in the medieval stories of King Arthur and Tristram. In Gk mythology the D. is represented with eyes ever on the watch, e.g. guarding the 'Apples of the Hesperides' and the

'Golden Fleece.' The D. passed into Christian tradition as the symbol of evil or the devil. D.s were met in the legends of St George and of St Margaret of Scotland. They feature also in Celtic mythology, the Red D. still being an emblem of Wales.

Dragon, popular name of sev. species of lizard, and particularly applied to members of the Amer. genus *Dracaena* and the Malayan *Draco* (see FLYING DRAGON). The Komodo D. (see MONITOR) is the largest of the monitors.

Dragon, in botany, name applied to plants in the genus *Dracontium* (q.v.). Green D. is a N. Amer. herb, *Arisaema dracontium*. D. plants are species of *Dracontium* (q.v.). The name of D.-wort is given to *Artemisia dracunculoides*, a species of Compositae, and *Polygonum bistorta*, a species of Polygonaceae. The D.-tree is *Dracaena draco*, a liliaceous tree from which exudes the resin known as D.'s blood. D. root occurs in hot countries and is believed to be fertilised by snails; the tuber is used in medicine. D.'s head, or *Dracoccephalum*, a genus of the Labiatae, receives its name from the appearance of the corolla.

Dragon-fly, name of a number of insects (about 2500 species) now considered to belong to the order Odonata. They are



DRAGON-FLY

sometimes called 'devil's darning needles' and 'horse-stingers,' but are at the same time harmless except to the insects which form their food; horses and ponies, however, view them with some misgiving and will move out of their path of flight. They are characterised by a very freely moving head; large compound eyes, made up of thousands of facets; an overhanging upper lip enabling them to catch their prey; small antennae; 2 pairs of wings equal in size, the main nervures having a longitudinal direction crossed by a number of nervules; an elongated abdomen and slender legs. The flight is very fast and

powerful, and on migration the D. can fly hundreds of m. In the early stages of their life they live close to the water, the eggs being deposited in or near the water, and there is no pupal stage of quiescence. During the nymph phases the mask, a modification of the lip, enables them to obtain their prey. The species are distributed over the globe, but principally in tropical regions; some, however, are natives of Britain. It is a curious fact that none of the varieties has been given a popular name, as is the case with butterflies and moths. They are exceedingly voracious and very active, some species having a brilliant and beautiful colouring. Included in the number of 43 species in Britain are 16 damselflies, differing little in appearance from D.s. Their nymphs, however, breathe through the back while those of D.s breathe through their tails. The damselfly, too, is not so strong as the D. and is content to fly around the home water. See W. F. Kirby, *A Synonymic Catalogue of Neuroptera Odonata*, 1890; W. J. Lucas, *British Dragon-flies, Odonata*, 1900; C. Longfield, *Dragon-flies of the British Isles*, 2nd ed. 1949.

Dragon Mountains, see DRAKENSBERG.

Dragonet, *Callionymus*, a genus of small, spiny-rayed fishes living in temperate and tropical seas; the males have the fin-rays produced into filaments.

Dragonnades, see CAMISAIRDS.

Dragon's Blood, a name applied in ancient pharmacology to the resin derived from a number of plants, chief of which are the *Caesalus draco*, an E. Indian palm, *Dracaena draco* of the Canary Is., and the *Croton draco* of Mexico.

Dragon's Mouth and Snappedragon, popular names for flowers of the genus *Antirrhinum*, family Scrophulariaceae. The corolla is personate, and when pinched between the fingers the mouth opens and then closes with a snap.

Dragoon (Fr. *dragon*), originally applied to a cavalry soldier, trained to fight on foot. He received his name from his weapon, a 'dragon' or short musket, so called from the dragon's head worked on the muzzle, which was first carried by the horsemen of Marshal Brissac in 1600. Accustomed to fighting with the infantry, they were organised into companies, their officers bearing infantry titles. D.s were naturally at a disadvantage, as regards armament and horsemanship, compared with the *bona fide* cavalry regiments. Since the campaigns of Frederick the Great the term D. has been used of medium cavalry. In police actions and all kinds of guerilla warfare D.s have been employed, for they combine efficiency with economy. When Louis XIV proceeded against the Protestants, he was said to 'dragoon' or 'dragoonade' them. The Scots Greys (estab. in 1683) is the oldest D. regiment in the Brit. Army. See also DRAGOON GUARDS; ROYAL DRAGOONS; SCOTS GREYS.

Dragoon Guards. Prior to the First World War there were 7 regiments of D. G.: the 1st (King's), 2nd (Queen's Bays), 3rd (Prince of Wales's), 4th (Royal

Irish), 5th (Princess Charlotte of Wales's), 6th (Carabiniers), and 7th (Princess Royal's). The progress made in mechanisation (q.v.), combined with the need for economy, resulted in the amalgamation of many of the old cavalry regiments and eventually in their conversion into armoured car or tank units. The regiments in 1957 were the 1st (King's), 2nd (Queen's Bays), 3rd Carabiniers (Prince of Wales's, an amalgamation of the 3rd and 6th), 4th/7th (Royal), and the 5th Royal Inniskilling (an amalgamation of the 5th D. G. and the 6th Inniskilling Dragoons). The 1st and the 2nd D. G. are to be amalgamated by 1959.

All the old regiments of D. G., except the 7th, were raised at the time of the Monmouth rebellion of 1685. The 1st regiment acquired their title 'King's' in 1746. They fought, as did most of the other regiments of D. G., in Marlborough's campaigns, also in the S. African War, and at Ypres and Loos in the First World War. The Queen's Bays fought at the battle of the Boyne as the 3rd Regiment of Horse, and their present name came into use in the mid 18th cent. In the First World War they fought at Mons, Le Cateau, Néry, Gheluvelt, and at various points in the Ypres salient. The 3rd D. G., the old-time 4th Regiment of Horse, fought under Marlborough as 'Wood's Horse' and received their title, 'Prince of Wales's,' in 1768. Besides taking part in Marlborough's campaigns they fought in the Peninsular battles; and, in the First World War, at Holbeke, Klein Zillebeke, and Gheluvelt in the 1st battle of Ypres; and in 1915 took part in combined cavalry operations in the 2nd battle of Ypres. The Royal Irish D. G., raised in 1697 as 'Arran's Cuirassiers,' received their eventual name in 1788, and fought with distinction at Balaklava and other Crimean battles, and at Tel-el-Kebir. In the First World War they are credited officially with being the first Brit. troops to come into contact with the Germans, charging and routing a column of Uhlans at Jemappes on 20 Aug. 1914. They also fought at Mons and in the Ypres sector. The 5th D. G. were the former 2nd Green Irish Horse of 1717; they also fought in Marlborough's battles, and in those of Wellington. In the First World War they were at Le Cateau, Néry, and Ypres. The Carabiniers, formerly the 8th Regiment of Horse, became the 3rd Irish Horse in 1745 and the Carabiniers in 1788. Besides taking part in Marlborough's campaigns, they fought in the Afghan War of 1879 and at Paardeberg in the S. African War. Like other regiments of cavalry, their fighting in the First World War was mainly in the capacity of infantry in 1914, notably at Gheluvelt. The 7th D. G. were raised in 1689 by the 1st duke of Devonshire to support the Protestant cause during the revolution. At the battle of the Boyne they fought as Schomberg's Horse. After Marlborough's battles their commanding officer was the famous Jean Louis Lord Ligonier (q.v.). Their other battles prior to the First World War included Dettingen and

Tel-el-Kebir. In the First World War they were at the battle of the Somme, 1916, being especially prominent in the stiff fighting around Bazentin and Longueval.

Mechanised, and fighting as units of the Royal Armoured Corps, all the D. G. regiments won new honours in the Second World War. The 1st King's D. G., in action in the first Libyan campaign, served in the W. Desert and Tunisia until the destruction of the Axis armies in N. Africa. In Italy they led the fighting advance of the Fifth Anglo-Amer. Army into Naples. They also fought as infantry. In Dec. 1944 they went to Greece to restore public order in Athens and Attica. The 2nd D. G. (the Queen's Bays) served in the W. Desert and in Tunisia with the Eighth and First Armies. They fought in the Knightsbridge battles, the withdrawal into Egypt, and at El Alamein. In the pursuit to Tunis they were part of the armoured desert wing whose surprise turning movement drove the enemy from his Mareth defences. They were continuously in action in the It. campaign between the spring of 1944 and the early summer of 1945. The 3rd D. G. (the Carabiniers) were the only tank unit in the garrison of Imphal (Burma), besieged by the Japanese in the summer of 1944. Some of their tanks climbed slopes of over 35 degrees, and, after the Jap. failure, mounted the Chocolate Staircase to Tiddim and fought their way up Kennedy Peak, 8500 ft high. Crossing the Chindwin and the Irrawaddy they helped to capture Mandalay, Prome, and Rangoon. The 4th/7th D. G. were among the first armoured troops to land in Normandy in June 1944. They were engaged in the heaviest fighting of the Caen-Palaisse battles until mid Aug. The first armour across the Seine, they fought at Arnhem, and, in the following Feb., were the first Brit. troops to link up with the Americans against the Ger. counter-offensive in the Ardennes. They crossed the Rhine with the 51st Highland Div. and supported the 3rd Brit. Infantry Div. in the capture of Bremen. From 'D' Day until the end of the war they destroyed 100 Ger. tanks and many self-propelled guns and machine-gun posts. The 5th Royal Inniskilling D. G. also landed in Normandy among the first armoured troops. They were in action continually during the Caen battles from mid June until late Aug. In the sweep from the Seine to the Scheldt they drove from the neighbourhood of Amiens to the region of Ghent in 3 days. After crossing the Rhine they led the way into Hamburg.

Draguignan, Fr. tn, cap. of the dept of Var, on the Nartuby, 528 m. SE. of Paris. It has leather and textile industries, and a large Amer. military cemetery. Pop. 12,000.

Drain, see PUBLIC HEALTH; SEWAGE; and SANITATION OF BUILDINGS.

Draining, Drainage, removal of water or other fluid by gravitational flow. Drainage is often associated with the carrying away of sewage matter in artificial channels (see SEWAGE), and with re-

claiming land by enclosing it with dykes and carrying off the water by special channels. In the practice of agriculture, however, the term is most often used to designate the removal of excess of water, which would otherwise become stagnant, from a clayey soil. Such D. was practised by the Romans, who kept their lands dry by open trenches or drains in which a porous channel was maintained by a layer of stones or twigs. The use of covered drains was revived in England by Joseph Elkington about 1763, who showed that land could be freed from stagnant water by tapping the obstructing clay by deep drains in suitable directions. In 1823 James Smith of Deanston introduced the parallel system which is the basis of all methods now in use. When the slope of the field, or of any section of it, is determined, and a suitable outlet for the water obtained, a main receiving drain is constructed along the lowest part of the ground, and a series of parallel drains made so as to fall towards the main drain. Smith suggested that each trench should be 30 in. deep; at the present day they are usually cut to a depth of 3 to 4 ft, the width at the bottom being just sufficient to receive the line of porous cylinders which carry off the water. Formerly these were connected by collars, but if well laid there is no necessity for that method of joining. The distances between the parallel drains may be from 10 to 40 ft, according to the extent to which water is imprisoned.

The effect of D. land is greatly to increase its agric. value. In a marshy soil, aquatic plants and mosses thrive and prevent the proper development of grass or corn. The temp. tends to be low from the constant evaporation, and crops are, therefore, liable to fail in bad seasons. Tillage is difficult on account of the toughness of the soil. The excess of moisture prevents the passage of air through the soil, thus starving the roots. Sheep and cattle are much more liable to disease. When the land is drained these disadvantages disappear. By this means many dists. in the low-lying parts of the E. of England have been converted into good arable and pasture land. The Land Drainage Act, 1930, was passed to promote schemes of land drainage, through the formation of catchment authorities under the Act. See R. W. Walker, *Principles of Underdrainage*, 1929; B. W. Adkin, *Land Drainage in Britain*, 1933; H. H. Nicholson, *The Principles of Field Drainage*, 1942.

Drake, Sir Francis (c. 1545-96), sailor and circumnavigator. Local tradition has it that he was born at Crowndale, near Tavistock, his parentage, and the exact year of his birth, being doubtful. But there is no reason to doubt Camden's statement that in his youth D. was apprenticed to the sea. In 1565 he sailed with Capt. John Lovell to the Sp. Main, and his capacity for handling a vessel became so well known that 2 years later he was selected to command the *Judith* in that ill-fated expedition of Sir John Hawkins (his cousin), which was defeated

with great loss off San Juan de Lua. Between 1570 and 1573 he made 3 voyages to the W. Indies, during which he sacked Portobello and Vera Cruz, and accumulated a considerable fortune. It was in 1577 that he set out for the R. Plate on a buccaneering expedition, and he made his way through the straits of Magellan, sailed through the Indian Archipelago, rounded the Cape of Good Hope, and returned to England, having thus completed the circumnavigation of the globe, the first Englishman to have done so. To his vessel, the *Golden Hind*, came Queen Elizabeth I on 4 April 1581, and there knighted the intrepid sailor. Four years later he was given the unofficial command of a fleet, and committed many savage assaults on the Sp. fleet and the Sp. coast



SIR FRANCIS DRAKE

tus. In 1588, when the Sp. Armada (q.v.) sailed for England, D. played a leading part in its defeat off Gravelines, pursuing it and destroying sev. vessels, as the fleet sailed northwards up the coast to Scotland. The following year D. was associated with Norreys in the disastrous Lisbon expedition, and its failure was used by his enemies to discredit him and his aggressive policy. In 1595 he was sent with a fleet to the W. Indies, and it was whilst on this expedition that he d. of dysentery near Nombre de Dios and was buried at sea. D. has been called by some critics a common pirate, and alternatively hailed by others as a Protestant hero. In fact he played a considerable part in founding the Eng. naval supremacy which was to endure for cents. after his death; and his character and career, with the strange mixture of idealism, extreme brutality, and brilliant individualism and courage, epitomised the Elizabethan age. See life by J. S. Corbett, 1890; see also J. S. Corbett, *Drake and the Tudor Navy*, 1898; and A. L. Rowse, *The Expansion of Elizabethan England*, 1955.

Drake, Nathan (1766-1836), essayist and doctor, b. York. His best-known books were *Shakespeare and his Times*, 1817, and *Memorials of Shakespeare*, 1828.

Drake, see DUCK.

Drakensberg Mountains, or Dragon

Mountains, chain of mts. situated in SE. Africa and lying parallel to the coast, between Cape Province and the Vaal R. The seaward slopes are steep and precipitous, while landwards the slopes are more gradual and form part of the tableland. That portion of the chain between Natal and Basutoland contains the highest points, Champagne Castle, Mont-aux-Sources, and Giant's Castle, each being considerably over 10,000 ft in altitude, and all within 60 m. of each other. The prin. heights along the Transvaal, Natal, and Orange Free State frontiers are Malani, Inkwele, Tintwa Majuba, and Drakensberg. The S. part of the chain forms the watershed between the rvs. flowing W. to the Atlantic and those flowing E. and S. to the Indian Ocean. The Orange R. and the Tugela rise in Mont-aux-Sources. Van Reinen's Pass and Laing's Neck are the chief passes crossing the range.

Dram, see METROLOGY.

Drama, in of E. Macedonia, Greece, celebrated for its tobacco. It has an active trade and fertile surroundings. The pop. includes many refugees from Asia Minor who settled in D. after 1922, thereby providing labour for a large increase in tobacco culture. Pop. 29,500.

Drama (from the Gk *drân*, to do), a form of literary art for the direct representation of human actions and characters through individual impersonation, before an audience. This article does not attempt to give more than a general historical sketch of world D. Greater detail will be found in articles on the literatures of each country and on the individual writers mentioned. There are also separate articles on the main London theatres and on a number of actors and actresses. For other subjects related to D., see CENSORSHIP OF THE DRAMA; CINEMATOGRAPH; COMÉDIE FRANÇAISE; COMMEDIA DELL' ARTE; COSTUME DESIGN. THEATRICAL; MELODRAMA; MUSIC HALLS; MUSICAL COMEDY; NATIONAL THEATRE (BRITISH); NON-PLAY; PANTOMIME; RADIO DRAMA; REPERTORY THEATRE; THEATRE; UNITED STATES OF AMERICA (FILM).

In literary hist. the D. is usually classified as a branch of poetry, though many plays have been written in prose. Both the epic, or narrative, and the lyric, expressing individual emotion, are applied in D., where the facts of a story are developed in interchange of speech and action. This latter distinguishes the D. from simple dialogue; the illusion of reality is rendered plausible by the scene-painter and the stage-manager; altogether they express objectively every emotion by word, gesture, or play of feature. The div. of a play in acts and scenes originates in the subject-matter of the D. itself; the invention of the drop-curtain and scene-shifting has created mechanical accessories. All these divs. mark the different stages of the development of the plot, show the complications leading to the climax, and finally solve the problem by the 'catastrophe.' The famous doctrine of the 'unities' is hardly more than a

formulation of the inevitable stage-restrictions. Their origin may be traced to Aristotle's remarks on tragedy, but as conventions of the theatre they were definitely accepted by the classical Fr. dramatists, foremost among them being Racine and Corneille. The 'dramatic unities' are three: of place, of time, and of action. Place precludes any extensive change of scene; time is limited to the space of one day for the development of events; action requires that all the events shall converge on a simple plot. Shakespeare, Lessing, and the Fr. romanticists recognise as fundamental only the last of the three. Upon the Gk stage, the model for the classicists, there was no curtain and very little possibility for change of scene; consequently, unity of place was practically inevitable. Unity of time was necessary from the habitual presence of the chorus on the stage. Unity of action is simply an application of the principle on which is based every work of art. Sometimes a secondary plot is created by the author for the display of subsidiary characters of the play, mostly for the purpose of enhancing, by contrast, the effectiveness of the main action.

The classic departments of the D. are tragedy and comedy; tragedy has a sad ending, comedy ends happily. But there are other differences. Tragedy deals seriously with serious themes, with the sufferings of humanity, and with fatality. Comedy exploits the follies and absurdities of the ridiculous and the base. Tragedy entertains through the excitement to pity and sympathy, comedy through the excitement to mirth. Satirical purposes may dictate the choice of the object of ridicule. Under-plots in tragedy introduce a comic element as a counterpoise to tragic emotions and heighten the impressiveness of the latter (see the grave-digging scene in *Hamlet*). Modern plays, however, contain much more diversity of plot than the ancient, and many of them are neither tragedy nor comedy, neither fish nor flesh. Of the different kinds of D., the so-called historical or romantic are sufficiently defined by their names. *Melodrama*, of lt. origin, is a broadly treated mixture of tragedy and comedy, appealing to the lesser critical emotions. This term was first applied to romantic D. to which music had been added, and was used in this sense in England to describe those plays which could not be performed as written owing to the veto exercised by the charter rights of Drury Lane and Covent Garden Theatres. Music was introduced into them and they thus circumvented the ban and were known as melodramas. The Fr. *drame*, described variously as *tragédie bourgeoise*, or *comédie larmoyante*, represents life with little imitation as to form. Comedy has developed in not a few varieties, from the 'comedy of manners' of the 18th cent. to farce, burlesque, and vaudeville. Pantomime and ballet are ancient offshoots of the regular D., perhaps parts of its origin. Mimicry is fundamental to the acted D., an inevitable part of human nature, and doubtless common to all people. The

dramatic dialogue of the Book of Job and the dramatic lyrics in the Canticles may be the primitive form of dramatic tendency, but the regular dramatic history begins in Greece.

Greek drama, both tragedy and comedy, was the consequence of the worship of Dionysus or Bacchus. At the Dionysian festivals in Attica, the followers of the wine-god were impersonated by choruses of men half-clad in goat-skins, whence probably derives the word tragedy (*tragōidia* = lit. goat-song), singing dithyrambic songs in honour of the god as they danced about the altar; thus, about 600 BC the Corinthian poet, Arion, led a cyclic chorus of 50. Half a century later appeared Thespis of Attica, whose innovation was the introduction of an actor to fill the intervals of singing with stories, mimicry, and short dialogues with the leader of the chorus. Soon after the more serious performances were limited to the sadder parts of Dionysus' story and of other mythological tales, 'Isistratus estab. at Athens the *Lenaea* festival, in which, as somewhat later, at the *Great Dionysia*, prize dramatic contests were included, and the development of tragedy was continued by Choerilus, Phrynichus, and other playwrights. The 5th cent. BC produced the greatest tragic writers of the Athenian stage: Aeschylus, who enlarged the dramatic possibilities by making the number of actors 2; Sophocles, who added a 3rd; and Euripides. The original chorus of 50 was divided into 4 or 12 each (increased to 15 by Sophocles), and plays were presented in groups of 4 called tetralogies, in one of which in each tetralogy the original satyric form was maintained. The other 3, called a trilogy, formed a consecutive series upon a single legend. A tragedy generally was made up of a series of episodes, separated by lyrics sung by the chorus, introduced by the prologue and terminated by the exode. The actors were trained by the author, and to 'teach' a D. was equivalent to producing it. The expenses of the production were borne by a chosen citizen, called the *choregus*, who thus participated in the contest. The Athenian tragedy was a sort of serious religious function. Aristotle in his *Poetics* defines its motive as 'to purify the passions of fear and pity through the exalted exercise of them.' Characterisations of the 'great tragic trio' of Athens have been innumerable from the time of Aristophanes. With Aeschylus, the idea of *Nemesis* (divine vengeance) is an overwhelming mystery; with Sophocles it is a part of the moral law of life; with Euripides it becomes a source of human sadness. Under this trinity, tragedy in Attica became the means of expressing the deepest religious thoughts; their successors, Ion, Achaëus, Agathon, and others, are insignificant, as none of their works has come down to us. Later, most of the lyrical element was lost through the dropping of the chorus: from being an Athenian institution, tragedy spread to other Gk lns, and its special relation to the worship of

Dionysus disappeared. However, the earlier works were continually reproduced; we find them performed under the Ptolemies at Alexandria. Gk comedy developed parallel with tragedy; it originated with the crude songs of the more rustic Dionysian festivals, which led naturally to a dramatic composition of a gay character. It is said to have been introduced into Attica early in the 6th cent. BC by Susarion, the Megarian, but before it was encouraged at Athens it developed elsewhere, particularly among the Dorians in Sicily, where flourished Epicharmus of Cos (b. c. 540 BC) and Sophron, the inventor of mimes, who wrote in Doric prose, dispensing with both chorus and plot. Athenian comedy is commonly divided into 3 periods of old, middle, and new comedy. Aristophanes was the great master of the first; Cratinus, Crates, and Eupolis were his contemporaries. It was constructed on similar lines to tragedy, but with a chorus of 24 and an additional element, the *parabasis*, in which the audience was directly addressed; it dealt frankly in personalities, was largely political, and did not hesitate to caricature the leading men of the day. At the period of middle comedy the freedom of speech was somewhat limited, and the butt of the comedian's ridicule was the follies and foibles of whole classes rather than those of individuals. The chorus was dropped. The new comedy, at the beginning of the 3rd cent. BC, brought the aforementioned tendency to a full development. Political questions were neglected, and writers like Menander and Philemon devoted themselves to the exhibition of ridiculous complications of the social life of a decadent society. Some of the types then created, the gullible old man, the dissipated son, the impudent servant, serve still in our days. This latest Gk comedy is chiefly known to us through the adaptations of the Rom. comedians Plautus and Terence.

Roman drama. The Romans, who had but few dramatic gifts, naturally preferred comedy to tragedy. Comic elements are to be found in the *saturae* of the early Lat. ins. It is generally assumed that the Romans borrowed their first idea of a play during a period of national despondency (364 BC, Livy vii. 2) from the Etruscans, from whom came their word *histrion*, an actor. The rude farces known as *fabulae Atellanae* were effusions of sportive humour, and came from the Oscans. Mimes they took from Magna Graecia; and their literary D. was practically an imitation of the Greek. The D. was one of the earliest branches of literature cultivated by the Romans. Both comedies and tragedies were written by Livius Andronicus, Naevius, and Ennius; tragedies by Pacuvius and Attius, none of which has come down to us. Naevius is celebrated for having got into trouble by ridiculing prominent people in imitation of the old comedy of Athens. What is left to us of Rom. comedy belongs to the works of Plautus and Terence, of the class called *palliatae*; closely adhering to the Gk models, as distinct from the so-called

togatae, which had Rom. subjects. Plautus, once a poor labourer, has a degree of rough vigour and broad jocularity, while Terence, a Carthaginian slave, is more refined and delicate in his wit and characterisation. The works of both are based on Menander and Philemon, but one change of form is to be particularly noted: the prologue ceased to be the first act of the play, and became what it has since remained, a detached explanation. Tragedy, more as literature than for stage production, was cultivated by writers of the Augustan age and later. Of all these attempts nothing remains except the rhetorical D.s attributed to Seneca the Younger. One of them, *Octavia*, is of the class called *praetextae*, treating historical Rom. subjects; the remainder are all from Gk mythology. With the decadence of the Rom. empire, all 'legitimate' D. declined, and the stage was held by dancers and pantomimes, some of whom became great popular favourites. Cicero testifies to the excellence of Roscius, the most celebrated of Rom. actors.

Indian drama was long said to have been derived from the Greeks, but is now generally thought to be of independent origin. Like the Greek, it arose from religious ceremonies, along with the dances and songs of popular festivals. However, the Hindu D. is not tragic, and makes far more of romantic love than does that of the Greeks. Kālidāsa, the greatest literary genius of India, commonly assigned to the 1st cent. BC, is by recent criticism placed several cents. later. The best period of Sanskrit D. was from about the 4th to the 9th cents. AD. A peculiar feature of Indian plays is the use of different dialects for different characters. Gods, heroes, and men of high standing speak Sanskrit; women and men of low position speak Prakrit in various forms. The best known Sanskrit play is Kālidāsa's *Sakuntala*, a heroic love D. of poetical beauty. Another 5-act play of Kālidāsa's is *Micramorvasi* (The Hero and the Nymph). Among other Hindu dramatists deserve to be mentioned Bhavabhūti, a Brahman of S. India in the 8th cent.; 2 of his 3 plays concern the adventures of Rama, the hero of the epic of *Rāmāyana*, on which sev. of the later Indian D.s are founded. Other noted plays are: *Mricchakatika* (The Toy Cart), a D. of social life, in 10 acts, credited to King Sudraka of the 6th cent.; and *Ratnavali* (The Pearl Necklace), a romantic play, supposed to have been written by King Sriharsha, of the 7th cent. The Muslim invasion killed the D. in India, and, though Sanskrit plays have been written in modern times, they are rarely acted.

Chinese drama. The rudiments of Chinese D. had their origins in dance and impersonated acting as early as the 7th cent. BC when the court clown Yu Meng acted the part of a late minister to admonish King Chuang of Ch'u; since then the word 'yu-meng' has become synonymous with that for 'actor.' In the Han Dynasty (206 BC-AD 219) acrobatics performed on top of tall poles carried in teams of running chariots, and the performance of

miracle-plays based on popular legends, were the vogue at court. In the 6th cent. theatrical performance was known as 'broadway acting.' The actors and actresses trained by the T'ang Emperor in the 'Pear Garden,' however, were mostly dancers and singers, though to this day 'pear garden' is still occasionally used to mean the theatre. Extant Chinese dramatic literature dates from the Sung and Chin (10-12th cents.) when plays based on stories from Chinese history, popular romance, and Buddhist legends were written in lyrical verse of 'Irregular Metres' to be sung on the stage, while most of the dialogues were left to the actors and actresses to improvise. Play writing was the chief subject in public examinations in the Yüan (Mongolian) Dynasty, the Golden Age of Chinese D. The plays required in the examination papers were divided into 12 subject-matters, including legends of saints and immortals, lives of past celebrities, paragons of loyal ministers, filial sons, virtuous women, and faithful friends, stories of military achievements, comedies or tragedies of love, etc. The Yüan plays are usually divided into 4 or 6 acts, complete with classical verse, vernacular dialogue, and stage directions. In the following Ming and early Ch'ing times (15-18th cents.) Chinese D.s became enormously lengthy, each play often consisting of 40 or more acts (or scenes). As such a long play would last 2 or 3 days on the stage, the fashion has grown of extracting 1 or 2 acts from each of sev. plays for one performance by the repertory company. From Sung times Chinese D. has developed into 2 separate schools: the orchestra of the S. School, now known as the K'unshan Opera, mainly uses pipes and flutes to accompany the singing; that of the N. School, now known as the Peking Opera, uses string instruments, while percussion instruments are used in both Schools to punctuate the acting, which is often symbolised by highly stylised gestures, dance, or acrobatics if it is a 'military play.' Since the founding of the rep. in 1912, the modern W.-style play of dialogue and realistic acting has been introduced, and works of Shakespeare, Dumas, Ibsen, Gorky, Galsworthy, Shaw, and others have been trans. and put on the stage. (For further details about Yüan, Ming, and Ch'ing playwrights and their works, see CHINESE LITERATURE.)

Japanese drama. The origins of Jap. D. were both social and religious. First written references to Jap. D. occur in the *Ko-ji-ki*, a Record of Ancient Matters. Ad 712, where an account of *Kagura*, God-Music, is given. *Kagura* may have been originally music and dance either between, or in the presence of, gods. It is still played before *Shinto* shrines, and chants, rhythmic accompaniments to the movements of labour, such as the song for driving in stones, seem to have been incorporated into the *Kagura*. Field dances, *Tanar*, and field music, *Dengaku*, are of anet origin; while other dramatic forms of social origin are *Saibara*, songs probably sung when the people were about to carry

tribute to their rulers, and *Azuma mae*, songs of the K. provs. The *Malenri* (processions of cars) are still popular in Japan. *Dengaku* included 6 forms of D.—*Shiba* (lawn), *Dai* (great), *Sho* (small), *Maiko* (dancing girls), *Maru* (village) and *Kachi* (walking, probably on horseback)—and, with other dance D., such as *Ennen*, became formalised with the growth of Buddhism and developed into the *Noh* plays ('noh' meaning accomplishment), which are extremely conventionalised. *Noh* of *Sarugaku* (monkey-music) was originally comic, but lost its comic nature under the influence of the priests. In *Noh* there are 2 or more actors, the play is in verse and is chanted, the players are often masked, and all movement is formalised. By the end of the 15th cent. 4 types of *Noh* plays were in existence—*Shinto noh*, which deals with mythological subjects; *Shugen noh*, commemorating customs; *Yurri* and *Serei noh*, in which ghosts and spirits occur; and *Genzai mono noh* dealing with things of life to illustrate a moral truth. As the literary preservation of *Noh* plays was under the care of Buddhist priests, all comic element in them disappeared. The comic plays were extempore, and became incorporated in *Kyogen*. *Kyogen* means easy speech, and is realistic, non-literary social comedy. It is in prose, and is performed as interludes in the long programmes of *Noh* plays (see NOH-PLAY).

Medieval drama. During the Middle Ages the Church, practical as ever, undertook to replace the pagan shows by a Christianised equivalent, which seems to have arisen naturally out of the responsive chants and narrations of biblical events with which the congregations were both instructed and entertained. Later these entertainments took the form of regular liturgical D., which developed into the *miracle-plays*, *mysteries*, and *passion-plays*, cycles of which were performed at Chester, York, Coventry, etc. in the 15th cent., and which have survived in modern times at Oberammergau and elsewhere. With a similar purpose arose also the *moralities*, which mostly were performed by wandering churchmen. Lately there has been great interest in the mysteries and miracle and morality plays and many have been revived, often in eccl. surroundings. The most famous, *Everyman*, has been played in theatres with success, notably at the Court, 1903; Shaftesbury, 1905; and Garrick, 1907. One reason for their original production was the dissemination of religious instruction amongst the illiterate masses. The earliest recorded performance of a play in enclosed premises was at Dunstable in 1136.

Italian drama. The revival of the classical D. was earliest in Italy. Of the It. religious D., the *Rappresentazione Sacra*, mostly in connection with the festivities in honour of Saint John the Baptist, were responsible for 2 works of great merit, *Abramo e Isacco*, 1449, by Feo Belcari, and *San Giovanni e San Paolo* by Lorenzo de' Medici. At the beginning of the 16th cent. Plautan

comedy was revived in the writings of Cardinal Bibbiena, Ariosto, and Machiavelli, and some erratic attempts like that of Poliziano; but the modern It. D. was born when Aristino produced a rather dull and conventional tragedy in blank verse. *Sofonisba*. Torquato Tasso's *Aminia*, 1573, set the fashion of pastoral plays. At the end of the same cent. Giambattista della Porta wrote his familiar and sometimes farcical comedies of a pleasant originality. The romantic D., originated in Spain, found favour in Italy, and the reaction against the domination of the classic school became effective. Borghini, Michelangelo Buonarroti (a nephew of the great artist), with his comedies *Fancia*, 1612, and *Fiera*, 1618, and others supported the movement. At the same period Rinuccini and his followers, by uniting music to the romantic D., created what was called the *melodrama*. Consequently tragedy and comedy were rapidly superseded by the *musical opera*, which, a cent. later, was brought to a literary level by Zeno, and perfected to the utmost by Metastasio, who with his *Didone Abbandonata* (first produced in Rome 1723) completely fascinated the It. public. His long series of works culminated in the triumph of his *Attilio Regolo*, 1750. Maffei produced his *Meropé*, 1713, with the definite purpose of restoring classic tragedy. But Fr. dramatic art soon began to influence the It. stage, especially through the efforts of the actor-playwright Riccoboni. The 18th cent. produced Italy's 3 greatest dramatists: Carlo Goldoni, Carlo Gozzi, and Vittorio Alfieri. Goldoni (1707-93) left his native Venice in 1761 for Paris; he is called the 'Italian Molière,' and may be called the master of It. regular literary comedy. Gozzi (1720-1806), his rival, wrote dramas based on fairy tales; both transformed the popular *Commedia dell'arte* (Comedy of Masks) into a literary shape which for some time enjoyed immense success. Alfieri (1749-1803) was of quite another metal. He was bold and passionate, a follower of the classic school and observer of the unities, and helped to revive the national spirit by such tragedies as *Filippo II*, *Saul*, and *La Congiura de' Fazzi*. His successors, Monti, Nicolini, Manzoni, Silvio Pellico, and Cossa, relaxed their adherence to classic forms. In the 19th cent. Italy was influenced by Shakespearean methods, in consequence of which her dramatists affected to give prominence to the historical D. Some exceptionally good works were successfully performed by the great It. actors, Modena, Salvini, Rossi, and Madame Ristori. In recent years the poet Gabriele d'Annunzio gained some reputation as a playwright, principally by such of his works as he wrote specially for the great actress Eleonora Duse. Luigi Pirandello (1867-1936) is one of the greatest 20th cent. dramatists. His drama is metaphysical, and is influenced by the theory of relativity. There is nothing absolute about his plays and the characters in them are always concerned with their real, though hidden, personalities. Although the problems of his

plays may be considered as abstractions, the characters are so possessed with these abstractions that the problems become human, and the characters lose nothing of their reality. The language of the plays is exact and unembellished, and his whole dramatic treatment is objective, but his D.s hold the spectator throughout, and possess something of the quality of poetry. *Six Characters in Search of an Author*, 1921, and *Henry IV*, 1922, are 2 of his best plays, most of which have been translated into Eng. and many other languages. See also COMMEDIA DELL'ARTE. Giuseppe Giacosa (1847-1906) and Roberto Bracco (1862-1943) showed in their work much of the influence of Ibsen.

Spanish drama. Spain may well be considered as the bp. of the romantic D. Santillana, Lope de Rueda, called the patriarch of the Sp. stage, and Naharro were the beginners; Cervantes (1547-1616), Lope de Vega (1562-1635), and Calderon de la Barca (1600-81) became the perfectioners, the masters of Sp. dramatic literature. It is not generally known that Cervantes, of Don Quixote fame, is also the author of *La Numancia*, a serious tragedy of literary worth and dignity. Of his lesser contemporaries Cueva, Virues, and Argensula may be mentioned. Lope de Vega, the most prolific of dramatists of all times and nations, set all literary laws at defiance. He wrote with the most prodigious facility and with dramatic vigour. The number of his plays is said to exceed 1800, and they won great popularity, to which he often sacrificed some of his better qualities. Contemporaries of his were Juan Ruiz de Alarcón (c. 1580-1639) and Tirso de Molina (1571-1648) (Fray Gabriel Téllez), in whose *Burlador de Sevilla, ó el convidado di pietra* was first introduced the figure of Don Juan. Calderon was greater than Lope de Vega. He was the greatest of Sp. dramatists and one of the great dramatists of the world. He is lyrical and animated by the highest sentiments. His ideals were devotion to the king, to the church, and to personal 'honour.' Some of his best works are the religious plays called *autos sacramentales*, in which the mystery of the Eucharist is dramatically set forth. With his death in 1681 the brilliant period of the Sp. theatre was practically closed. His contemporary, Moreto, wrote numerous fine comedies, mostly of the 'cloak and sword' sort, for which the Sp. stage is renowned. José Echegaray y Eizaguirre (1832-1916) wrote more than 60 plays, many of which have as their theme a conflict between 2 forces. His best play is *El Gran Quilezo*, 1881. He attempted to deviate in his plays from the so-called 'punto de honor,' on which Sp. D. had centred hitherto. In 1904 Echegaray shared the Nobel Prize for literature with Frédéric Mistral, but the younger Sp. dramatists, the 'generation of '98,' revolted against the past theatre of Spain and expressed their grievances in a manifesto against Echegaray. Benito Pérez-Galdós (1843-1920) was exempt from the criticism of the 'generation of '98.' His plays usually express some

attitude of revolt, and are written regardless of stage technique, but the characterisation is good. One of the most famous of the 'generation of '98' is Jacinto Benavente (b. 1866), whose work is prolific and varied. His plays form the link between the old and new D. of Spain and contain the varied thought of all the most important European dramatists of the 19th cent. Among 20th-cent. dramatists Gregorio Martínez Sierra (b. 1881) and the brothers Serafin (1871-1938) and Joaquín Álvarez Quintero (1873-1944) are outstanding.

French drama. France, accepting the 'unities' as the first essentials in the D., revived the classical D., which appeals to the logical temper of the national genius. In the *mystères*, *moralités*, *satires*, *farces*, romantic or anti-classic tendencies were manifest, but no great advance in proper dramatic achievement was made. The first regular 5-act tragedy was written by Jodelle for the court of Henri II. He wrote some more plays, not without merit, but nothing remarkable was done till Pierre Corneille appeared in the reign of Louis XIII. He had to humour the Court by humouring the Academy, and to please the Academy he had to observe the so-called rules of Aristotle. He had already produced sev. plays of classical elegance and dignity, when, attracted by its romantic tendencies, he wrote his masterpiece, *Le Cid*. All Paris rang with the praises of this work, but the Academy held aloof. Corneille had to return to the classical limitations, and was rewarded with a seat in the Academy. It was more than came to his contemporary, the great Molière, who insisted on remaining an actor, a resolve which the dignified academicians could by no means tolerate. Molière's name is doubtless in all the essentials of pure comedy the foremost name in the hist. of the stage. Like Shakespeare, he borrowed much from both the Italians and the Spaniards, but he made his theatre truly Fr. in wit, expression, and characterisation. By the union of Molière's company with that of the actors of the Hôtel de Bourgogne, Louis XIV estab. in 1680 the Comédie Française (q.v.), an institution which is at the heart of the Fr. theatre, and is the most famous national theatre in the world. Racine was the great tragedian of the times of Louis XIV. He was not tempted, like Corneille, to overstep the academic proprieties. He was perhaps the most tender and the most elegant of Fr. writers, and it may truly be said that *Athalie*, his masterpiece, has never been surpassed in noble elegance and severe grandeur. The brilliant and erratic Voltaire astonished Europe with the audacity and power of his romantic tragedies. Could he have been able to temper the intolerant leonoclasm of his fight against superstition he would have ranked as a dramatist with Corneille and Racine. In the 19th cent., the D. of France was much more prolific than that of any other nation. Alfred de Vigny, Scribe, and Legouvé, Alexandre Dumas père, and Victor Hugo, the leaders of the 'romantic movement,' Alfred de Musset,

Emile Augier, Dumas fils, Octave Feuillet, Victorien Sardou, Edmond Rostand (the reviver of poetical plays), Jean Richepin, François Coppée, all produced meritorious dramatic works. Writers who composed their plays on the 'marital triangle,' giving great attention to construction, are P. Hervieu (1857-1915), praised for his literary style, Maurice Donnay (1860-1945), and Henri Bataille (1872-1922). Other 20th-cent. dramatists who specialise in sex drama, often with applied psychology, are Henri Lavedan (1859-1940), Jules Lemaitre (1853-1914), and Georges de Porto-Riche (1849-1930), while the plays of Alfred Capus (1858-1922) are sceptical in the extreme. Henry Bernstein (b. 1876) is a popular dramatist whose plays are almost melodramatic. Eugène Brieux (1858-1932), with other of his contemporaries, François de Curel (1854-1928) and Henri Bocque (1857-99), had his plays first produced at the Théâtre Libre, which was founded by Antoine in 1890. Brieux is known in Europe for the controversial subjects of his plays, but his dramatic ability is great and his language is incisive. Sacha Guitry (1885-1957) is another dramatist, but his fame is more in connection with his acting and elocution. Since the First World War, and more notably since the Second World War, Fr. D. has developed European importance in the works of H. K. Lenormand, Jean-Jacques Bernard, Jean Sarmant, Jules Romains, Paul Géraudy, Paul Claudel, Jean Giraudoux, Jean Cocteau, Jean-Paul Sartre, and Jean Anouilh, and experiment has taken the place of tradition.

German, Austrian, and Czechoslovak drama. Ger. D. dates practically from Lessing, Goethe, and Schiller. Its origin is similar to that of all cultured nations, and up to the middle of the 18th cent. the Ger. stage was little more than a feeble reflex of Fr. influence. Lessing, both by his works and critiques, was the reformer, not to say the inaugurator, of Ger. dramatic art. His tragic plays, *Miss Sarah Sampson*, 1755, and *Emilia Galotti*, 1772, and his comedy *Minna von Barnhelm*, 1763, opened a new era for the Ger. D., while in his *Hamburgische Dramaturgie*, 1767-9, he attacked Fr. classicism and praised Shakespeare. Goethe, one of the world's greatest geniuses, does not rank high as a dramatist. His *Faust*, 1759, is doubtless one of the greatest modern compositions; but his chief purpose is self-cultivation, and in the prologue, his last and most famous production, he explains why, although writing in dramatic form, he cannot accommodate himself to the exigencies of a popular theatre. Schiller is the dramatic poet proper of Germany. Goethe's genius was fuller and more complete, but Schiller compensated by the intensity of his powers. Of his contemporaries there deserve to be remembered Heinrich von Kleist, Körner, Effland (actor, manager, and author); of his successors Grillparzer, Grabbe, Otto Ludwig, Hebbel, Hahn, Mosenthal, Gottschall, Auzengruber, Gerhart Hauptmann (1862-1913) is an important dramatist of the late

19th cent. His plays are naturalistic and poetic and, with those of Sudermann, were performed by the Free Stage Society, founded in Berlin in 1889. Sudermann's greatest play is *Mayday*. A contemporary of his, Frank Wedekind (1864-1918), wrote plays which refuse to be classified. *The Awakening of Spring* is one of his best known plays: his dialogue is brilliant and his influence on post-war dramatists great. If Wedekind may be called a writer of expressionistic drama, 4 important 20th-cent. dramatists may be classed with him, Georg Kaiser (1878-1945), Ernst Toller (1893-1939), Fritz von Unruh (b. 1885), and Bertolt Brecht (1898-1956). Carl Zuckmayer (b. 1896) deals with topical problems. Max Reinhardt (1873-1943) is also important, his designs for productions being world famous. Arthur Schnitzler (1872-1931) is an important Austrian dramatist, his best play being *The Green Cockatoo*; Hugo von Hofmannsthal (1874-1929) is a tragic poet of profound influence; and Max Mell (b. 1882) deals in drama of the homeland. Czechoslovakia has 2 expressionistic dramatists, Karel Capek (1890-1939) and his brother Josef, whose best-known play is *R.U.R.*

Dutch and Scandinavian drama. The Dutch D. is hardly more than an imitation of Fr. romantic plays. Nothing remarkable has been produced in Holland save for the work of Hermann Heijermans (1864-1924) and Jan Fabritius (b. 1871); or in Flem. Belgium, Fr. Belgium is the motherland of the poet Maurice Maeterlinck (1862-1949), whose plays display somewhat extreme features of the symbolist movement. Maeterlinck's play *The Blue Bird* was very successful when produced at the Haymarket Theatre in 1909. The Scandinavian countries have in recent times developed a D. of importance. The Norwegians, Bjørnsterne Bjørnson (1832-1910) and, first and foremost, Henrik Ibsen (1828-1906), have become very distinctive figures in the D. of psychological and social problems. Ibsen's influence on European D. is immeasurable. *Peer Gynt*, 1868, *The Pillars of Society*, 1877, *A Doll's House*, 1879, *The Wild Duck*, 1884, and *Hedda Gabler*, 1890, are some of his best-known plays. Contemporaries and followers of his are Gunnar Heiberg, Vette Visle, Gabriel Finne, Anders Stilloff, and Knut Hamsun. Johan August Strindberg, the Swede (1849-1912), a powerful but somewhat discursive dramatist, is an antidote to Ibsen's feminism. In Denmark, Adam Gottlob Oehlenschläger (1779-1850) is known for his dramas of the national tradition of the Nordic hero-world. A wide influence in D. and literature also belonged to Georg Brandes (1842-1927), both dramatist and critic, and Kaj Munk (1898-1944), a writer of religious and idealistic plays. Notable early 20th-cent. Dan. dramatists are Johannes Anker-Larsen, Valdemar Rørdam, Otto Benson, Fru Emma Død, Gustav Esmann, Sven Lange, Gustav Wied, Hans Wiers-Jønsen, and Hjalmar Bergström.

Russian drama is of very recent development. It is said that in earlier

days Russian religious plays were performed. The first Russian theatre was estab. in 1756 in St Petersburg, and its manager, Sumarokoff, and Kizaznin, and other forgotten authors, wrote plays for it in the Fr. style. Catharine II herself elaborated satirical comedies, and in her time Ozlerov (1769-1816) was a writer of tragedies of repute. In the 19th cent. we have Griboedov (1795-1829), the author of *Gore of ума* (The Misfortune of Being too Clever); Nicolai Gogol (1809-52), whose comedy *Revizor* (The Inspector) has become known all over the world; Alexander Pushkin (1799-1837), whose *Boris Godunov* shows Shakespearean influence; Alexander Ostrovsky (1824-86), whose plays are realistic and deal with the emotions of the people; Alexis Tolstoy (1817-75), whose D.s are founded on stories of the Russian kings; and Count Leo Tolstoy, whose plays follow no traditions, but contain great character studies. Early 20th-cent. dramatists are Maxim Gorky, whose greatest play is *The Lowest Depths*, and Leonid Andreyev, whose plays are written in excellent prose. Both these authors belong to the period of the first revolution. Anton Chekhov, one of the greatest 20th-cent. dramatists, wrote plays for the Moscow Art Theatre, which theatre did not produce a specifically Soviet play until 1926. These plays are naturalistic artistically, needing simple yet sensitive acting. A later 20th-cent. writer is Evreinov, much of whose work is based on his own theory of 'monodrama.' Since the revolution, 1917, a new theatre has been built up in Russia. The theatre in Moscow to-day falls broadly in 2 parts: there is the section represented by the Moscow Art Theatre, the Maly Theatre, and the Kamerny Theatre, which has successfully merged the old traditions with the new. The other section is led by men like Meierhold, the firebrand of the Soviet theatre, and Nikolai Okhlopkov, of the Realistic theatre. Meierhold works on an elaborate theory of bio-mechanics; his actors, in fact, use stylised movements and steps and ladders; Okhlopkov has abolished the div. between the auditorium and the stage, becoming more Elizabethan than the Elizabethans.

English drama, as in other countries, had its origin in the religious plays, written and performed by churchmen, who understood how to spice their miracle plays and mysteries with grotesque amusement, and it was not until the middle of the 16th cent., as elsewhere, under the influence of the Renaissance, that the Eng. D. freed itself from these ant fetters. The earliest known Eng. comedy is (c. 1531) *Ralph Roister Doister*, by Nicholas Udall, a learned master of Eton. A few years later Sackville and Norton produced their dull tragedy in blank verse, *Gorboduc*, or *Ferrex and Porrex*. Thereafter dramatic production was rapid, but mostly worthless; authors were Bishop Still, Kyd, Lodge, Lyly, Peele, Green, and Nash. The first dramatist of real merit was Christopher Marlowe, the great predecessor of Shakespeare, whose best tragedies

are *Doctor Faustus*, 1604, and *Edward II*, 1594. But the great luminary of Eng. D.—it may well be said of all the world's D.—is Shakespeare. Among dramatists, the worthiest of his contemporaries are Ben Jonson and Beaumont and Fletcher. Jonson wrote comedies and tragedies, stood more under the influence of the classics, but also became famous with his light and graceful masques, which were the court's favourite entertainment. Beaumont and Fletcher worked in collaboration, and stand next to Shakespeare in romantic D. Dekker, Massinger, Ford, Webster, Chapman, and Shirley were authors of older Eng. D.s, when this kind of literature was abruptly and sharply terminated by the Puritan revolution. With the Restoration Fr. influence became apparent. Display mastered the play, and lavish staging assumed undue importance. Lee and the unfortunate Otway wrote tragedies; Shadwell and the licentious Wycherley produced comedies; Vanbrugh, Congreve, and Farquhar brilliantly depicted society under a veil of immorality and indecency even more marked than that of the licentious writers of Elizabethan times. Then came Gay, Mrs Centlivre, and the actor-playwright Colley Cibber, who was not lacking in dramatic spirit and invention. Famous, in another way, became Addison's tragedy *Cato*, 1713, a solemn literary work, written in blank verse. Lillo, Moore, Garrick the actor, Goldsmith, the Colmans, and Cumberland nearly all wrote in prose. They produced agreeable comedies; but, except Goldsmith's *She Stoops to Conquer*, 1773, hardly any of their works had a lasting success. Sheridan, who gave the impulse to what the Fr. call 'Comédie de Salon,' and whose *School for Scandal*, 1777, is perhaps among its best Eng. examples, has long acquired a lasting place in the hist. of the Eng. D. Sheridan's immediate successors, Holcroft, 'Monk' Lewis, Maturin, Mrs Inchbald, and others, are insignificant. Later Joanna Baillie, Coleridge, Byron, Shelley, and Henry Taylor wrote fine book-D.s little suited for theatrical production. Then came in more recent times the dramatic poetry of Tennyson, Browning, and Swinburne. Plays of scenic power were written by Sheridan Knowles and Bulwer-Lytton, and during the Victorian era many mediocrities flooded the Eng. stage with their wares. A sort of speciality was created by W. S. Gilbert in the 'libretti' he wrote for Arthur Sullivan's operas. Late 19th-cent. dramatists were H. A. Jones (1851-1929), Sir Arthur Wing Pinero (1855-1934), and Oscar Wilde (1854-1900), who wrote comedies of wit. Bernard Shaw (1856-1950), with the plays that followed his dramatic criticism, brought new life to the Eng. theatre. His plays are controversial and witty, and have received world-wide recognition. *Arms and the Man*, one of his earliest plays, was produced by the Independent Theatre that was founded by Grein in 1891. Others among his most famous are *Man and Superman*, *Pygmalion*, and *St Joan*. Other 20th-cent. dramatists are

John Galsworthy (1867-1933), whose plays were statements of social problems; Sir James Barrie (1860-1937), who introduced an element of fantasy; John Drinkwater (1882-1937), who specialised in chronicle plays; John Massfield (b. 1875), the Poet Laureate; Winifred Ashton, who writes under the name Clemence Dane; Rudolf Besier (1878-1942); Harley Granville-Barker (1877-1946), whose most important work was in stage production; O. H. Mavor (1888-1951), who used the pseudonym James Bridie; and the novelists Somerset Maugham (b. 1874) and J. B. Priestley (b. 1894). Repertory theatres have produced such dramatists as Stanley Houghton (1881-1913) and Allan Monkhouse (1858-1936). Verse drama was written by Stephen Phillips (1867-1915), Robert Bridges (1844-1930), Laurence Binyon (1869-1943), Laurence Housman (b. 1865), and Gordon Bottomley (1874-1948), and obtained a new lease of life with the plays of T. S. Eliot (b. 1888) and Christopher Fry (b. 1907). Leading modern dramatists were Ivor Novello (1893-1951) and Noel Coward (b. 1899), both of whom were actor-managers as well as playwrights. Other actor-dramatists are Robert Morley (b. 1908) and Emlyn Williams (b. 1905). Peter Tstinov (b. 1921), John Osborne (b. 1929), and Terence Rattigan (b. 1912) are among the best-known of the younger school.

In 1890 the Irish Literary Theatre was estab. by Edward Martyn, George Moore, and W. B. Yeats, later to be joined by Lady Gregory and 'Æ' (George Wm. Russell, 1867-1935). In 1904 this theatre became the Irish National Theatre, when it was financed by Miss Horniman as the Abbey Theatre. W. C. Fay (1872-1947), an actor who was also a founder of the modern Irish dramatic movement, was one of the creators of the style of acting which made that theatre famous. Two types of plays have been produced—literary plays and folk plays. Irish dramatists who have written for this theatre are W. B. Yeats (1865-1939), J. M. Synge (1871-1909), Lady Gregory (1859-1932), Sean O'Casey (b. 1884), and Lennox Robinson (b. 1886). Other Irish dramatists are Lord Dunsany (b. 1878), St John Ervine (b. 1883), and Samuel Beckett (b. c. 1906).

American drama is of comparatively recent growth. Royal Tyler's *The Contrast*, 1787, is cited as the first native comedy, but throughout the 19th cent. the inspiration of Amer. playwrights was mainly derivative, and they imitated Eng. or Fr. models. With the advent of such popular melodrama as *The Old Homestead* of Denham Thompson (1833-1911) and such essentially indigenous farces of low life as the semi-improvised works of Edward Harrigan (1845-1911), native originality first began to reveal itself. Probably James A. Herne (1839-1901), actor and stage manager, gave the greatest impetus to Amer. D. with his realistic play of New England life, *Shore Acres*, 1892, and his later pieces *Griffith Drennon*, 1898, and *Sag Harbor*, 1900. In their directness, sincere representation of human

nature, and absence of all psychological finesse lay their popularity. One of the most successful of modern Amer. dramatists was Clyde Fitch (1865-1909), whose social D.s put him in the front rank. Other notable successes were *The Easiest Way*, 1909, by Eugene Walter; *The Great Divide*, 1907, by William Vaughn Moody; *Jeanne d'Arc*, 1906, a poetical play by Percy MacKaye; and *Salvation Nell*, 1908, a striking slum theme by Edward Sheldon. The plays of these authors and also of Augustus Thomas (1857-1934) and Charles Rann Kennedy (b. 1871) are serious in intent and are written on European models. It was not until the rise of Eugene O'Neill (1888-1953), unquestionably the greatest playwright America has yet produced, that the period of tutelage definitely ended and Amer. drama came of age. A great experimenter, O'Neill was mainly a realist, but also used expressionist technique, as in *The Emperor Jones*, 1920; *Desire under the Elms*, 1924, and *Mourning Becomes Electra*, 1931, show the depth of his tragic power. Next to him comes Maxwell Anderson (b. 1888), who has won a high reputation with his historical tragedies in verse such as *Elizabeth the Queen*, 1930. Elmer Rice (b. 1892) became famous by his *Adding Machine*, 1923, an expressionist experiment, while his *Street Scene*, 1929, was intensely realist. Other dramatists of note are Lynn Riggs (b. 1899), whose *Green Grow the Lilacs* formed the basis of the highly popular musical comedy *Oklahoma*, in 1943; Clifford Odets (b. 1906), whose *Waiting for Lefty*, 1935, is a kind of proletarian morality play; Tennessee Williams (b. 1914) with *A Streetcar Named Desire*, 1947; and Arthur Miller (b. 1915), with *Death of a Salesman*, 1949, etc. In richness and variety the modern Amer. theatre rivals that of most other nations.

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A. W. Ward, *History of English Dramatic Literature to the Death of Queen Anne*, 1899; E. K. Chambers, *The Medieval Stage*, 1908, *The Elizabethan Stage*, 1924; L. N. Chase, *The English Heroic Play*, 1905; A. Nicoll, *A History of Restoration Drama*, 1923, and a series of 4 works, beginning with *A History of Early Eighteenth Century Drama, 1700-50*, and covering the 18th and 19th cents., 1925-46; H. Southern, *The Georgian Playhouse*, 1948; E. Reynolds, *Early Victorian Drama, 1830-70*, 1936; *Modern English Drama*, 1949; A. Dukes, *Modern Dramatists*, 1911; T. H. Dickinson, *An Outline of Contemporary Drama*, 1927; A. H. Quinn, *History of the American Drama*, 1927; A. S. Downer, *Fifty Years of American Drama, 1900-50*, 1951.

Dramatic Unities, 3 rules of D. construction derived from Aristotle's *Poetics*, observed by the Fr. dramatists, but ignored by Shakespeare, that (1) a play should represent what takes place 'within the limits of a single revolution of the sun, or nearly so,' (2) there must be no change of locality, and (3) there must be no minor plot. They were frequently adapted and modified by later critics, especially during the 17th cent.

Dramburg, see DRAWSKO.

Drammen, seaport of Norway, in Buskerud county, 33 m. SW. of Oslo by rail, at the head of Drammen R., through which the broad D. Fiord empties its waters into Oslo Fiord. Timber, floated down from the upland forests, and wood pulp are the staple exports, saw-milling, the manuf. of paper, and ship building being the other active industries. Pop. 30,000.

Drane, Augusta Theodosia (1823-94), historian and poetess, b. Bromley St. Leonards, Middx. Having been influenced by Tractarian teaching, she became a Rom. Catholic in 1850, entered a Dominican convent, and in 1872 became prioress of Stone, Staffordshire. Her works include *Catholic Legends and Stories*, 1855, *The Life of St Dominic*, 1857, *The Knights of St John*, 1858, *The Three Chancellors*, 1859, *Historical Tales*, 1862, and *Tales and Traditions*, 1862; also sev. lives of the saints and a vol. of verse, *Songs in the Night*, 1876. See B. Wilberforce, *Memoir of Mother Francis Raphael*, 1895.

Drang Nach Osten, expressive phrase given to the Ger. policy of forcing a way to a foothold in the E. through the Balkans. In the First World War they had by 1916 so far trans. the dream into a reality as to secure uninterrupted and unthreatened communication and commerce with Constantinople, over the 2 main arteries of Asiatic Turkey, and also with the cities of Damascus, Mecca, Jerusalem, and Bagdad. In the Second World War Ger. armies reached the Balkans and held them for sev. years, and also threatened Egypt and Persia. See also BAGDAD; BAGDAD RAILWAY.

Drant, Thomas (d. c. 1578), Eng. divine, first Eng. metrical translator of Horace. He won fame by his sermons attacking vanity and sensuality before the court at Windsor in 1569, and to the congregation

at St Mary Spital, London, in 1570, both pub. in that year. He wrote verses in Eng., Lat., and Greek (1564), his works including: *A Medicinable Morall*, 1566, *Sylva*, 1576; and a trans., *Horace, his Art of Poetrie, Pistles, and Satyrs, Englished*, 1567.

Draper, Elizabeth, née Solater (1744–78), b. India. She is remembered for her friendship with Sterne. The daughter of an Anglo-Indian official, she married at the age of 14 Daniel D. of the E. India Company's service, a man much older than herself. Coming to England in 1766 for her health she met Sterne and was flattered by the attention of the great man. When she returned to India he wrote regularly to her, and began the *Journal to Eliza*, which, owing to Sterne's death early in 1768, never reached her. In 1772 she left her husband, returned to England, and settled at Bristol. She was buried in Bristol Cathedral. The full story of her life is told, and her letters are printed, in the *Life of Sterne*, by 'Lewis Melville' (L. S. Benjamin) (1911).

Drapers' Company, one of the 12 great livery companies of the city of London, in existence in the 12th cent.; Henry Fitz-Alwyn (d. 1212), first mayor of London, is believed to have been a Draper. Chartered in 1364, the company enjoyed monopolistic control over the woollen cloth trade until the 17th cent. The first hall was in St Swithin's Lane, but in 1541 the estate of property of Thomas Cromwell was purchased from Henry VIII for use by the company. Twice, in 1666 and 1772, the hall was destroyed by fire, and it was largely rebuilt in the last century. The company is trustee of a great number of charities and a large proportion of its own income is devoted to charitable purposes.

Drau, see **DRAVA**.

Draught, current of air, in particular one which is induced or artificially forced to support combustion. *Natural D.* is produced by a chimney, through which the heated gases rise by reason of their lesser density, thus inducing a current of cool air through the fire. *Forced D.* may be produced by driving air at more than atmospheric pressure through the fire by means of fans. In locomotive boilers the D. is increased by turning the exhaust steam into the chimney, thus increasing the velocity of the current of air.

Draughts, generally thought to be one of the oldest of table games. A game of this kind was known to the Greeks and Romans and various monuments represent the anc. Egyptians as engaged in a similar amusement. It became common in Europe during the 16th cent. The game is played by 2 persons on a board similar to that used for chess, i.e. square board containing 64 squares, checkered in black and white alternately. Each player has 12 'men' in the form of circular discs, one set being black and the other white. These men are arranged on the 3 rows directly before each player. They may be placed either on the black or the white squares, but the extreme left hand square in front of each player must always be occupied. Lots are cast to decide which colour

each player shall have, and black plays first. The players then change colours after each game. The men move diagonally, one square at a time, so that play continues entirely on squares of one colour. If a man comes next to a man of the opposite side he is unable to move past unless there be a vacant square on the other side of his adversary's man, in which case he must jump over his man and occupy the vacant square, removing his enemy's man from the board. If, after taking a man in this way, it is possible for him to jump another man, taking this one also, he must do so in the same move. In the rare event of a player neglecting to take when the opportunity is given him, his adversary may either take the piece with which the capture would have been made (a proceeding known as 'huffing'), or compel him to revoke his last move and perform the capture. He may also, if he wish, allow the move to stand. If a player gets one of his men into his adversary's back line, this man becomes a 'king,' and is 'crowned' by having another man of the same colour put on top of him. The king may move either backwards or forwards, whereas the ordinary men can move only forwards, but this is the only privilege he has. He captures in the same way as ordinary men, except for this one difference. If a player touches a piece, he must move it if possible. 'The game is won by a player removing all his adversary's men from the board or by his placing them in such a position that they cannot move. See J. Sturges, *Guide to the Game of Draughts*, 1800; A. Anderson, *Game of Draughts* (revised by R. McCulloch), 1888; F. Tescheleit, *Master Play of the Draught Board*, 1926; Lees' *Guide to the Game of Draughts* (revised by J. W. Dawson), 1930.

Drava, see **SLAVENIA**.

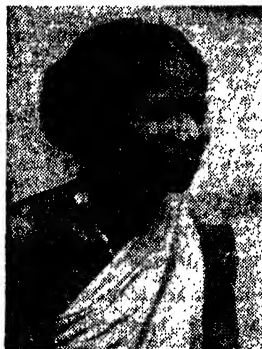
Drava, or **Drave** (Ger. **Drau**), riv. of central Europe, the 2nd largest trib. on the r.b. of the Danube (q.v.). It rises in the Tirol and flows generally ESE, through Austria and Yugoslavia to join the Danube 13 m. E. of Osijek (q.v.). For part of its course it forms the boundary between Yugoslavia and Hungary. It is navigable for light boats for some 380 m., as far as Villach (q.v.). It was by way of the valley of the D. that the Huns and Slavs (qq.v.) reached the Alps. Length 450 m.

Dravidians (Sanskrit *Drāvida*, or *Drāmida*), name of a large group of Indian peoples (non-Aryans) and their family of languages. They are found chiefly in S. India, extending upwards from the peninsula N. to the Arabian Sea, about 100 m. below Goa, thence along the W. Ghat to Kolhapur, NE. through Hyderabad, and E. to the Bay of Bengal. They also appear in N. Ceylon (see *Cust and Constable's Linguistic and racial maps*). The more important languages in the D. group are Telugu, Tamil, Kanarese, Malayalam, and those of more backward tribes, such as Gōndi, Kōṭa, Kurux, Kul, and Rajmahal. The Brāhmins of Baluchistan also speak a D. dialect. The D. languages seem to have formed a quite distinct group, independent of the Aryan

or Indo-Germanic. There are about a dozen different tongues comprised in the group, differing from each other radically and not merely in dialect forms, and yet derived from a common D. source. But all the chief literary languages, that is Tamil, Malayalam, Kanarese, and Telugu, now contain a large proportion of Sanskrit words. Inflections are expressed by 'agglutination,' or affixing particles to primary roots or bases, but these additions do not blend with the roots as in the case of inflectional languages. Nouns are of 2 classes, high-caste and casteless (for rational and irrational beings respectively), gender being distinguished only in the former. A peculiarity is the double

hinged at one end and free at the other, so that it could be drawn up or let down as required. The original form was the lifting D., used to span the moat of a castle; this form is used now to provide a passage over canals, etc. The swing-bridge is a D. which revolves in a horizontal direction.

Drawing, the art of representing in line forms seen or imagined. D. can be done in many mediums on a suitable surface. The medium can be pencil, pen, brush, graver, or burin (tool used for engraving on copper). The surface can be paper, wood, linoleum, copper, stone, etc. D. can be placed under 2 broad headings: (1) free drawing and (2) mathematical drawing.



DRavidIAN TYPES OF INDIA

Left to right: Scytho-Dravidian (Tamil), Aryo-Dravidian (Hindu), and Mongol-Dravidian (Bengali)

form for the first person plural of the personal pronoun, for including or excluding the person addressed. There are no relative pronouns, relative participles being used instead. A separate negative conjugation, usually with only one tense, exists for verbs. D. tongues were spoken by some 57,497,000 people according to the census of 1901. The D. were probably the aborigines of the Deccan. They are mostly very dark-skinned, with wavy, black hair (not woolly), and are possibly descendants of the Negritos of Malaysia. See E. Hultzsch, *S. Indian Inscriptions, Tamil and Sanscrit*, 1809-95; R. Caldwell, *A Comparative Grammar of the Dravidian Languages*, 1856, 1875; G. A. Grierson, in *Linguistic Survey of India*, iv. 1904; A. H. Keane, 'Race and Speech' in *East and West*, 1905; W. R. R. Rivers, *The Todas*, 1906; E. Thurston and K. Rangachari, *Castes and Tribes of Southern India*, Gov. Press, Madras, 1909; G. Slater, *The Dravidian Element in Indian Culture*, 1924; L. K. Ananta Krishnayyar, *The Mysore Tribes and Castes*, 1928-31; W. Koppers, *Ethnologische Probleme Vorderindiens*, 1916.

Drawback, see CUSTOMS DUTIES.

Drawbridge, in ancient times an invariable adjunct of a castle. It was a bridge

1. This involves the use of *free expression* and, in its finest examples, a high degree of skill and aesthetic taste. In advanced D. the representation of a 3rd dimension needs an understanding of light and shade and reflected light, also a knowledge and appreciation of lineal and aerial perspective. Lineal perspective is the diminution in size of objects as their distance increases. Aerial perspective is the change of colour (and/or lack of distinctness) of objects caused by atmospheric conditions, as their distance increases. The application of D. to surfaces such as wood, linoleum, copper, stone, etc., needs further technical skill and is dealt with under the headings of wood-cut, lino-cut, engraving, etching, lithography, etc. A thorough knowledge of D. is the only true basis for the painting of pictorial subjects. 'Drawing,' said Ingres, 'is the probity of art.' As to its *practical* purpose, it falls into 2 main categories: (1) as a preliminary stage in the creation of a work of art, picture, fresco, sculpture, etc.; or (2) as a finished work of art in itself—the water-colour drawing being an important example. (1) can be further subdivided into: the sketch showing main lines of composition; the detail study of figures or costume; the finished drawing or 'cartoon'

transferred to wall or canvas. Again, some old masters, perhaps in competition with others, produced finished drawings to show their patrons what the finished painting would look like. Otherwise, and apart from its function as a preparatory study, artists have always valued drawing as a personal exercise and intimate means of expression; alternatively as the most suitable medium for certain types of finished work, e.g. topography, caricature. *See also* CARICATURE. *See* C. M. Ellwood, *Pen Drawing*, 1927; A. Gladstone-Jackson, *The Right Way to Human Figure Drawing and Anatomy*, 1948.

2. Mathematical D. is essentially utilitarian and needs practical skill and, in advanced work, involves knowledge of physical laws and construction detail. The ability to use D. instruments such as rulers, scales, compasses is required. In architecture, the ability to prepare accurately measured and scaled plans, elevations, sections, and isometric drawings is essential. A knowledge of perspective (lineal) is also useful. Mathematical drawing is used in connection with aircraft construction, shipbuilding, locomotive building, automobile construction, and many other industrial undertakings. *See also* ENGINEERING DRAWING.

Drawsko (Ger. *Dramburg*), tn of Poland, in Koszalin prov., on the Drawa, 48 m. SSW. of Koszalin (q.v.). Until 1945 it was in Pomerania. There is a woollen industry. Pop. 3500.

Drayton, Michael (1563-1631), poet, b. Hartshill, Warwickshire. He entered the family of Sir Henry Goodere, near Tamworth, as a 'proper goodly page' and seems to have settled in London about 1590 or 1591. There is some evidence that Anne, daughter of Sir Henry Goodere, afterwards wife of Sir Henry Rainsford, was 'Idea' who inspired D.'s first pastorals, *Idea, the Shepherd's Garland*, 1593, and his first sonnets, *Idea's Mirror, Amours in Quaterzains*, 1594. Another patroness was Lucy Harrington, who became Countess of Bedford. To her before her marriage D. dedicated his *Legend of Matilda and Endimion and Phoebe*, 1595. Between 1597 and 1602 D., by that time in high repute, was doing theatrical hack-work for Henslowe (q.v.) and among his other and earlier associates were Dekker and Munday and, somewhat later, Webster and Middleton. D.'s historical poems began with the *Legends* of historical personages, *Piers Gaveston*, 1593, *Matilda*, 1594, and *Robert Duke of Normandy*, 1596. In the heroic poem *Mortimeriados*, 1596, his theme was again the political troubles of Edward II's reign. Written in rhyme-royal stanzas, this, his first poem of length and importance, appeared as *The Barons' War* in the revised ed. of 1603. Written in ottava rima in its remodelled form, it is a rather tedious narrative of episodes and loses by comparison with Marlowe's dramatic treatment of the subject in *Edward II*. The inequalities and rudeness of style in this narrative disappear in D.'s *England's Heroical Epistles*, 1597, historical poems written on the model of Ovid's *Heroides*

and containing some of his very finest lines. Equally national in spirit is his ballad of 'Agincourt,' first pub. with his odes in *Poems Lyricall and Pastoral*, 1606. Few, however, read with pleasure his ponderous *Poly-Olbion*, which, according to Francis Meres, he had begun in 1598, and which he himself aptly describes as a 'Herculean toil.' For in it he undertook a 'chorographical description' of everything of antiquarian and topographical interest throughout Great Britain. This vast work at least demonstrates the unsuitability of the Fr. classical metre (couplets of Alexandrines) for Eng. verse. Yet D. could write a poem of the grace and charm of his *Nymphidia*, 1627, a mock-heroic fairy poem which is the inspiration of many of Herrick's lyrics; the pastorals *The Shepherd's Sirena* and *The Quest of Cynthia*, love idylls; and one splendid sonnet, 'Since there's no help, come let us kiss and part,' which Rossetti proclaimed 'almost the best in the language, if not quite.' Among his last poems were *The Muses Elizium*, 1630, and a few *Drine Poems* on O.T. themes, in decasyllabic couplets. The editing of *The Works of Michael Drayton* in 5 vols. with introductions and notes, etc., by K. Tiltotson and B. H. Newdigate, completed in 1941, is a masterpiece of minute and comprehensive scholarship. *See also* O. Elton, *Michael Drayton: a Critical Study*, 1903; B. H. Newdigate, *Michael Drayton and His Circle*, 1941.

Drayton-in-Hales, *see* MARKET DRAYTON.

Dreadnought, Brit. battleship, 490 ft long, of 17,950 tons, with speed of 21 knots. The first of this since famous class was launched and completed at Plymouth (1906), the designs having been accepted in 1905. It gave its name to a class of modern battleship, and was in fact a synonym for an ironclad or battleship carrying 10 12-in. guns and a number of 12-pounder quick-firing anti-torpedo-boat guns, and propelled by steam turbines. *See also* BATTLESHIP; SUBMARINES.

Dream may be defined as the manifestation of a conscious process during sleep. During sleep conscious activity is, under ordinary circumstances, entirely in a state of suspense; the sensory nerves no longer perform their usually active duties, the action of the heart becomes slower, the brain is at rest, and during this period gets rid of the waste tissue and is restored to fresh activity. Our faculties, however, need not all be in an equal state of inactivity: it is possible to perform a number of quite ordinary actions whilst in a state of sleep, e.g. soldiers have often marched for some considerable distance whilst, to all intents and purposes, in a deep sleep. We dream, then, principally because the suspension of mental activity is not complete. It has been held that sleep is never so profound as to be dreamless, but this is a theory which cannot be proved. On the other hand, it has been held that we dream only during those periods of falling asleep and awakening during which our mental activities are in a semi-conscious state. This, again, is a

theory which cannot be actually proved, but may to some extent be disproved, since it is well known that manifestation of dreaming has been noticed in cases where the subject was in a deep sleep. Further, in many cases sleepers suddenly awakened have aroused themselves with difficulty from a D. That all our powers of judgment are inactive during a D. cannot be held as true, since on occasion we find that we desire to prolong a D. of peculiar happiness, whilst we can arouse ourselves from one which terrifies us by its horror. D.s, whilst resembling in many ways the process of conscious activity, on the other hand differ characteristically from the experiences of our waking life. Time, space, and order are not to be found during our D.s, though on examination they are seen to possess an inner coherence. Also the events which occur to us during these periods leave a great impression on our mind for the time being, although we may on awakening remember little or nothing of the experiences undergone during sleep. That the activities of the day, or the immediate time preceding, have influence on our D.s is undoubted. Incidents trivially passed over during our waking experience form often the basis of a D.; details forgotten in the routine of the day will occur time and time again during sleep. Problems in mathematics have been solved, legal decisions given, and even sermons have been produced during sleep. Coleridge's poem *Kubla Khan*, however, was composed as the result of a vivid opium D., and was written immediately on awakening. All creative writers draw on the material of D.s, often undisguisedly. Experiments have been made in order to test the effect of the senses in D.s, and it has been proved that D.s can easily be related to the immediate sensory cause. Certain drugs, such as opium, and hashish, have peculiar effect upon the character of D.s, whilst the physical state of the body also can often give peculiar effect to the D.s. 'The nightmare, or "anxiety dream," may be due to the presence of undigested food in the stomach; other uncomfortable D.s may be caused by inability to breathe properly, or by an uncomfortable position in sleeping. The state of the brain is also an important factor. D.s are in some cases not only thought out but actually acted by the dreamer; cases of this kind, such as sleep-walking, the performance of acts during sleep which the sleeper has no recollection of after waking, and sleep-talking, are all phenomena of this state of mind. Amongst ant peoples D.s were regarded as of divine origin, the interpretation of D.s took an active part in the life of the nation, and the 'seer' was regarded with awe by the people of the nation. The whole matter of the interpretation of D.s was put on a scientific basis in the 20th cent. by the work of Sigmund Freud (q.v.) and his followers. The D. is regarded by Freud and the psychoanalysts of all schools as the royal road to the 'unconscious' mind, the correct diagnosis of the state of the latter being the first step in mental therapeutics. See J. W. Dunne, *An Experiment with*

Time (a non-psychoanalytic explanation of dreaming), 1927; S. Freud, *The Interpretation of Dreams* (Eng. trans. by A. A. Brill, from 8th Ger. ed., 1950; R. Fliess, *The Revival of Interest in the Dream*, 1953. See also PSYCHOANALYSIS).

Drebbel, Cornelius van (1572-1634) claimed, erroneously, to have been the joint-inventor with Santorio of the thermometer, but was famous among his credulous contemporaries rather for his empirical inventions, such as a boat for rowing under water, in which the passenger could read without artificial light, than for his real discoveries. A pensioner of Emperor Rudolph II and tutor to Ferdinand II's son, he owed his release from imprisonment in Austria (in consequence of a revolution) to James I of England. He passed the rest of his life in England. Besides his water thermometer D. discovered a bright scarlet dye, afterwards used with effect in the Gobelins manufactories, and devised improvements in the microscope and telescope.

Dred Scott Case, The, most important decision of the U.S.A. supreme court, handed down in 1857, and one of the contributing causes of the Civil war. D. S. was a Missouri slave, taken by his owner in 1834 into Illinois (where slavery was prohibited), and later into Minnesota (then part of the Wisconsin Territory). D. S. had married and had 2 children while on free soil, but he and his family were later taken back to Missouri.

In 1846 he sued for his freedom on the ground that his residence in a free state had given him the standing of a freeman. The supreme court of Missouri held that on return to Missouri the status of slavery re-attached to him and that he had no standing in court, but the U.S.A. circuit court before whom the case came in 1850 decided that as a citizen of Missouri D. S. had standing in court, but that he was still a slave.

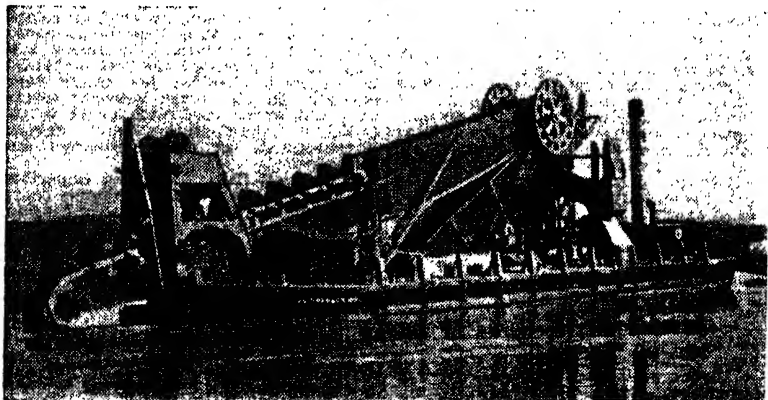
The case was argued before the supreme court of U.S.A. in 1855 and 1856, and the decision (not unanimous) that D. S. was not a citizen, that the constitution guaranteed security in private property and the value of such property in a slave could not be constitutionally invalidated in any state, even by the Federal gov., roused the most intense feeling throughout the country and made it clear that slavery would not be abolished along constitutional lines. Chief Justice Taney had not only remanded S. to slavery, but had gone out of his way to proclaim the Missouri compromise void and denied the right of congress to make slaves or their descendants citizens. He virtually said that the Negro had no rights that white men were bound to respect.

Dredging Machine, machine for cleaning and deepening the entrances to or channels of rivers, canals, docks, and harbours, by removing the mud or rock from the bottom.

1. *The grab dredger* is used only where the amount of mud is small, or where time is not of too great importance. It consists of a pair of heavy iron jaws

hinged together at the top, and slung by chains over a crane, which is usually mounted on a float, although it may be worked sometimes from the shore. The 'grab' is lowered to the sea bottom with the jaws held open by means of side chains. As the hoisting chain is slackened so under its own weight the 'grab' sinks into the mud. The side chains being then slackened and the hoisting chain drawn upwards, the two jaws close together and so bring up a quantity of mud with them; the 'grab' is hauled up and swung so that the mud may be discharged into a barge,

so that the machine is drawn back across the bank. As the buckets are turned over by the top tumbler they immediately discharge the mud into a shoot. Usually this shoot projects over the side, and so the mud is discharged into 'hopper' barges, fitted with trapdoors on the bottom. Sometimes the D.M.s are built with a hopper well, so that they carry their own mud and deposit it. It is evident, however, that such hopper dredgers lose time when compared with the others, for they have to proceed to the 'dumping ground,' whereas the



Tyne Improvement Commission

BUCKET-LADDER DREDGER

the jaws being opened again by means of the side chains.

2. *The bucket-ladder machine* consists of a long ladder, one end of which is fixed high above the deck. The other end projects downwards through a well in the float, and is held by a chain which runs around a 'topping lift' which enables the ladder to be lowered or raised to the depth required. This ladder is usually placed in the centre of the float, although there are *double ladder machines*, the 2 ladders being side by side, and *side ladder machines*, in which the ladders project over the sides of the float so that they may be used close to dock-walls, etc. In all cases, however, an endless chain of buckets passes round the ladder, which is fitted with tumblers at each end. The top tumbler is moved by a system of steam gearing. Meanwhile the machine is moored by bow and stern cables with further cables over both bows and quarters, and as the buckets revolve, so cutting mud up from the bottom, the chains on one side are hauled in while the others are slackened. So the D. M. is gradually drawn right across the bank to be cut. When this has been done the D. M. is hauled a little further forward, and the process repeated by hauling in the chains on the other side,

ordinary dredger is continually dredging and filling other 'hopper' barges. *See also CONVEYORS.*

(3) *The suction dredger* is fitted with a centrifugal pump, with a flexible suction pipe, which is dropped to the sea bottom. Through this the sand or mud is pumped up and discharged either into other barges or into its own hopper well, if it is provided with one. *See E. C. Shankland, The Dredging of Harbours and Rivers, 1931.*

Dreikanter, or *Ventifacts*, pebbles, often resembling brazil nuts in shape, which show a number of flat facets meeting in sharp keels. These faceted surfaces are produced by natural sand blast—i.e. by the abrasive action of sand carried in the wind. D. are formed only where a supply of dry sand, which is not held down by a cover of vegetation, is available. They are therefore typical of deserts.

Dreiser, Theodore (1871-1945), Amer. novelist and playwright. *b.* Terre Haute, Indiana, 12th child of poverty-stricken and piously Catholic parents of Ger. descent. Educ. at local schools, and at Indiana Univ., he was on the staff of the *Chicago Daily Globe*, 1892; dramatic editor and travelling correspondent of the *St Louis Republic*, 1893-4; editor of *Smith's Magazine*, 1905-6; managing

editor of *Broadway Magazine*, 1906-7; and editor-in-chief of Butterick pub., 1907-10. His first novel was *Sister Carrie*, 1900, which was suppressed and denounced as immoral because of its sordid realism. His next was *Jennie Gerhardt*, 1911. Then came *The Financier*, 1912, and *The Titan*, 1914—2 parts of a trilogy intended to portray the career of Charles Tyson Yerkes, the traction millionaire. Other works include: *A Traveller at Forty*, 1913; *The Genius*, 1915; *Plays of the Natural and Supernatural*, 1916; *Twelve Men*, 1919; *The Hand of the Potter*, 1919; *Hey Rub-a-Dub-Dub* (essays and philosophy), 1920; *The Colour of a Great City*, 1923; *An American Tragedy*, 1925; *Moods* (verse), 1926; *Chains* (lesser novels and stories), 1927; *Thoreau*, 1939; *America is Worth Saving*, 1941; and *The Bulwark* (posthumously), 1946. His autobiographical *A Book about Myself*, 1922, was repub. as *Newspaper Days*, 1931. See also F. O. Matthiessen, *Theodore Dreiser*, 1951.

Drenthe, prov. of the Netherlands, S. of Groningen and Friesland. The surface is low and covered with wide heaths and peat. Some parts of the prov. are intensively cultivated, and sheep and cattle are raised. The cap. is Assen. Area 1030 sq. in. Pop. (1954) 296,403.

Drepana, see TRAPANI.

Dresden: 1. Dist. (*Bezirk*) of the Ger. Democratic Rep. (E. Germany), bounded N. by Kottbus, E. by Poland, S. by Czechoslovakia, and W. by Karl-Marx-Stadt and Leipzig (qq.v.). Area 2952 sq. m.; pop. 1,984,000.

2. Ger. city, cap. of the dist. of D., and former cap. of Saxony (q.v.), on the Elbe (q.v.), 98 m. S. by E. of Berlin. In 1270 Henry the Illustrious, Margrave of Meissen, chose D. as his cap., and its prosperity increased rapidly when, after the div. of the Saxon lands in 1185, it became the seat of the Albertine line. It suffered severely during the Seven Years War (q.v.), and again during Napoleon's campaign of 1813, when he won his last great victory at D., at the cost of 15,000 dead and wounded and 12,000 prisoners to the allies and a loss of 10,000 to the Fr. During the revolution of 1849 there was desperate street fighting from 3-6 May, and the old opera house was burnt down. In 1866 the city was occupied for a time by the Prussians. During the Second World War D. was reduced to ruins in a devastating series of air-raids in early 1945. Most of the destruction occurred in one night, that of 13-14 Feb., when there were 2 raids on the city; in these 2 raids 25,000 people were killed and 30,000 more injured. When the Russian troops of Marshal Koniev entered D. on 8 May, they found the Prager, Augustus, Moritz, and Ring Strassen to be more paved roads between ruins. The centre of the city was dead—6 sq. m. of the inner tn had been wrecked. The destruction extended to some of the suburbs in the S. and W., and some 27,000 houses and 7000 public buildings had been completely destroyed, among them half the churches and half the

schools. The rebuilding of the city was started almost immediately after the end of the war. D. lies on both banks of the riv.: on the l. b. are the Friedrichstadt and Altstadt, and on the r. b. are the Neustadt (in reality the older part) and the Antonstadt. There are fine parks and riverside promenades. To Herder the city was the 'German Florence,' a description justified by its magnificent art collection—the 'Zwinger' collection alone containing Raphael's 'Madonna di San Sisto'; Correggio's 'La Notte' and 'Mary Magdalene'; 'The Adoration' of Paul Veronese; Titian's 'Tribute Money'; and paintings by Claude Lorraine, Rembrandt, Van Dyck, and Rubens. This famous collection was begun by the Elector Augustus I (q.v.), but its true founder was Augustus III (q.v.), who in 1745 bought the unique Modena Gallery, containing 2400 pictures by It. and Flem. masters. It was from D. that rococo art spread in the 18th cent., and the city was formerly renowned for its baroque buildings; of these few are left. Among the buildings of note which escaped complete destruction are the baroque Hofkirche, 1739-51, the Renaissance royal palace, 1530-5, and the opera house.

The prin. industries are the manuf. of machinery, optical and musical instruments, cigarettes, and glass. Porcelain is also manufactured, but the famous 'Dresden china' has been made at Meissen (q.v.) since 1710. Pop. 500,000.

Dresden China, a term used in Eng. from the 18th cent. onwards, for Meissen (q.v.) porcelain. The mark 'Dresden' appears on modern forgeries of Meissen.

Dress (from O. F. *dresser*, to set out, to arrange; Lat. *dirigere*, to direct), the general term for the clothing of men and women, or, when used more specifically, the garment of a woman that is worn outside.

D. in its earliest form probably consisted of the skins of animals, with the hair or fur sometimes turned inside, or sometimes turned outwards. Cave art suggests that European peoples of the Palaeolithic and earlier Neolithic periods wore some such D. But skill in weaving textiles for clothing has appeared at an early stage in most civilisations, and in primitive times these textiles were either hung from the shoulders or wound round the body in straight strips as they came off the loom. The D. of the Assyrians and Egyptians consisted of arrangements of rectangular pieces of woven material, often pleated; feathered garments were sometimes worn. Wool was used as well as linen in the N. of Europe, and linen, cotton, silk, or wool, or a mixture of silk and wool, in the S. of Europe, in India, and in China. Some peoples in extremely cold climates, such as the Esquimaux, continue to wear mainly skins as their D.

The prin. articles of D. in classical Greece were the *chiton*, a basic garment of sev. kinds, worn long by women and shorter by men; the *himation*, similar in shape to a large oblong shawl, which could be draped in a variety of ways; and

the *chlamys*, a similar but smaller garment. The girdle was also an important part of feminine D. In Rome the usual basic male garment was the tunic, over which the *toga* (q.v.) was worn on all formal occasions. Ladies wore garments similar to those worn in Gk classical times. In the N. of Europe (as in Persia, Mongolia, and parts of N. America) men, and sometimes women, wore long trousers or hose (q.v.) beneath a short tunic. Trousers, first despised by the Romans as 'barbarian' wear, were later adopted in Italy in the early Middle Ages, and appeared first as military or working-class D., and later, in the form of tight hose, as an essential part of male D.

Early medieval D. consisted of 2 or 3 garments, still of rectangular shape, worn over each other. At the beginning of the 14th cent., and coinciding with the first signs of the Renaissance spirit in other fields, 'tailoring'—the cutting of stuff—appeared for the first time, and by the end of the century a form of masculine D. had been evolved which fitted the body all over like an outer-skin. Women's D., developing along the same lines, fitted the torso down to the hips from which point a skirt fell in folds to the ground. This tailored conception of men's and women's D. remains the fashion for the W. civilisation to this day—there has never been a return to the primitive rectangular form of D. With the appearance of tailoring the older idea of a long D. for the upper classes disappeared as far as men were concerned, or rather survived only as a vestige in the official or ceremonial D. of ruler, priest, scholar, judge, alderman, etc. Women's D. continued to touch, or almost touch, the ground, until their general enfranchisement in the early years of the 20th cent.

Frequent changes in D. seem to have occurred from the earliest times (a phenomenon recognised by the word 'fashion,' q.v.), though first of all mainly in comparatively small details. From the Renaissance onwards changes have been more drastic, and 'romantic' periods, when D. has been varied in design, heavily ornamented and has not followed the lines of the body, but has striven to create a new idea of man, have alternated with 'classic' periods when D. has been on the whole uniform, with subdued ornamentation, and has followed, and sometimes emphasised, or idealised, the body's shape. The achievement of the tailored 'outer-skin' at the end of the 14th cent. was followed in the early 15th by the invention of a D. which, instead of reflecting the shape of the body beneath, was designed to produce an artificial shape as remote as was practicable from the natural shape. This fashion coincided with the 'International Gothic' period in the visual arts. From the middle of the 15th cent. until the beginning of the 16th D. for men consisted of a close-fitting jacket covering the torso and arms, tight hose covering the legs and hips, and a loose removable over-coat or cloak. Women's D., which, like men's, had earlier been

fantastically unnatural in shape, returned once more to the 'classic' idea of a close-fitted upper-part and a skirt wide enough to allow freedom of movement. The D. of the 16th cent. showed once more a romantic disposition, and towards the century's end clothes which violently contradicted the lines of the body reappeared. Huge 'ruffs' (q.v.) filled in the space between the head and the shoulders, upper parts of sleeves were puffed out, spherical breeches covered men's thighs: women wore bodices like inverted cones and skirts mounted over drum-shaped farthingales (q.v.). D. was especially exaggerated in the N. of Europe, where the Gothic temperament tends to prevail at all periods. In contrast, the D. of the middle of the 18th cent. once more expressed a classic spirit. Hair was powdered a uniform grey, and both men's and women's D. followed, and in some respects emphasised, the body's shape, but never contradicted it.

Until the end of the 18th cent. men and women of the upper class could, and as a rule did, wear bright colours, rich materials, lace, and embroidery, but the coincidence of the Fr. with the Industrial revolution produced a new 'democratic' conception of male D., sober in colour and made of heavy woollen cloth. The outward difference between upper and lower class was in this way considerably lessened and has not been resumed. With the growing demand for the emancipation of women throughout the second half of the 19th cent. women's D. developed, side by side with characteristically feminine clothes, a more 'mannish' type of D. which consisted of a tailor-made jacket worn over a shirt and a plain skirt, usually made of cloth in a dark or neutral colour. This tailored costume, the counterpart of the modern man's suit, has remained popular. With the employment of women in many fields previously reserved for men during the First World War, women's skirts were, for the first time in the Christian era, shortened, until, for a few years in the middle of the 1920's, they reached no further than the knee. As a result of this change, silk, rayon and later nylon stockings in flesh colour have continued to be worn by all women, and great attention has been paid to the design of shoes. Following the First World War men's clothes began gradually to lose the stiff sombre formality of the 2nd half of the 19th cent., and to become more varied and colourful. This modification has not, however, meant a return to the aristocratic silks of the 18th cent., or the abandonment of the uniformity in clothes used for business or ceremonial occasions, but rather the introduction of extra garments into the male wardrobe which are chiefly used as leisure D. The 19th cent., with its generally romantic climate, was expressed in the constantly changing D. of women, which at almost all times during the last two thirds of the century was ponderously ornamented and romantic in design, with no emphasis on the natural shape of the body. Men's D., having become 'democratic,' remained

almost a frozen fashion, though minor changes did take place. The Aesthetic movement of the late 19th cent. was reflected in self-consciously 'artistic' types of D. and in an attempt to introduce reforms in the interest of 'beauty' into men's clothes. These reforms were belatedly successful in producing some of the modifications which began to appear in the early 20th cent., such as the introduction of soft tweeds and coloured shirts, and the general softening of the outline in at least one item of sports D.—the 'Norfolk jacket.'

Centres from which fashions have emanated have varied through the ages. Archaic Gk dress was certainly based on Egyptian design; the Rom. Empire borrowed its fashions from Greece; Byzantium combined Christianised Rom. D. with oriental elements. Florence and Paris seem to have been simultaneously the 2 centres from which fashions spread northwards and eastwards in the 14th cent., and Burgundy became a rival to both in the 15th cent., until, with the fall of Charles the Bold, Paris gradually resumed its lead. Both men's and women's fashions were centred on Paris until the beginning of the 19th cent., when England, as the leading industrialised nation, estab. itself as the authority on men's clothes, leaving Paris still the centre from which women's fashions emanated. Between the two 20th-cent. world wars, America became an important influence in the design of men's clothes, and in some respects captured the lead from England.

In certain periods the design of D. has been particularly inventive. Probably the 4th cent. AD in Byzantium was one of these. Certainly the 2nd and 3rd decades of the 15th cent. in Italy, when men took on the silhouette of birds of fantastic plumage, was another, and at about the same period women's headdresses in the N. of Europe became huge and varied in shape. The Elizabethan ruff was ubiquitous and has never been repeated, and neither have the 'full-bottomed' wigs of the later 17th cent. The 19th cent. saw more drastic changes in the design of women's D. than any other 100 years, but the shortening of their skirts in the 20th cent., and the introduction of the idea of tailoring in the 14th, have been the two most revolutionary changes that have taken place. In the 20th cent. between 1930 and 1957 less change occurred in women's D. than in any other period of equal length since the middle of the 14th cent. The 2nd half of the 19th cent. was equally unchanging in men's D.

Styles of D. have at certain periods, and in certain areas, become frozen for varying lengths of time, so that a recognisable regional D. has come into being. This type of D. has never actually remained entirely static, but has always been slightly modified by the pressure of current fashion in other places. Such regional fashions have usually been the sign of a backward community, or of a community temporarily isolated by poli-

tical or geographical circumstances from more progressive or mobile neighbours. With the development of facilities for travel and communication, regional D. has almost disappeared from Europe, except where it has been artificially kept in being by local patriotism. It is noteworthy that as far as can be discovered England has never had a characteristic D., though regional D.s have existed in Ireland, Scotland, and Wales. For certain purposes styles of D. are deliberately 'frozen' in order to produce a stable uniform to distinguish a certain individual or group within a community: undress military uniforms have usually been adapted from sporting or hunting D. and have been kept static in design for some time; religious communities have often remained faithful to the most sober type of D. of the moment of the estab. Organisations such as Freemasons, Boy Scouts, or the Salvation Army, as well as persons whose occupations have an official standing in society, such as policemen and postmen, have their own recognisable uniforms which modify very slowly. Long robes have been regarded as lending dignity to men in high official positions; wigs have been retained from the 18th cent. for legal D. and the ceremonial D. of servants in some countries. There has been a great increase in the 19th and 20th cents. in the number of special forms of dress in which special sports are performed: tennis, cricket, football, bathing, and many other leisure-time activities have their own special D. There is also a strict etiquette as to what shall be worn on what occasion, and an understanding of correct forms of D. is an important part of good manners.

D. in communities outside the European tradition has not, as a rule, followed the European pattern, but all D. has developed in the same way, from the early use of animal skins to the later practice of wearing rectangles of woven material, until, in some communities, the more elaborate idea of shaping stuff to fit the body has emerged. In hot climates D. among primitive peoples has in some places appeared to consist of a purely decorative arrangement of strings or beads, but it is probable that such D. has always had a purpose that is more than decorative, and that it is some sort of distinguishing mark. The D. of some of the most ancient civilisations, the Minoan for instance, is difficult to reconstruct from the surviving works of art that have come down to us, but there is no reason not to think that certain of the ancient peoples reached a high degree of sophistication in the design of their clothes. Where trousers have been worn outside Europe, e.g. in China, they have not necessarily been worn by men, but often by women, while men have worn skirts. There does not, in fact, seem to be any essentially masculine or essentially feminine form of D. See J. R. Planché, *The Cyclopaedia of Costume*, 1879; F. W. Fairholt, *Costume in England*, 1896; M. G. Houston and F. S. Hornblower, *Ancient Egyptian, Assyrian, and Persian*

Costumes, 1920; H. Norris, *Costume and Fashion* (4 vols., to 1603), 1924, 1927, 1938, 1938; F. M. Kelly and R. Schwabe, *Historic Costume in Western Europe*, 1925; P. Macquoid, *Four Hundred Years of Children's Costumes*, 1925; M. Tilke, *Costumes of Eastern Europe*, 1926; M. von Boehn, *Modes and Manners of the 19th Century*, 1927-30; Iris Brooke and J. Laver, *English Costume of the 18th Century*, 1929; and *English Costume of the 19th Century*, 1931; Iris Brooke, *English Children's Costume since 1775*, 1930, 1935; *English Costume in the Age of Elizabeth*, 1933; *English Costume of the 17th Century*, 1934; and *English Costume of the Later Middle Ages*, 1935; C. Willett Cunningham, *English Women's Clothing in the Nineteenth Century*, 1937, 1948; and *The Art of English Costume*, 1948; Margaretta Byers, *Designing*, 1939; J. Laver, *Letter to a Girl on the Future of Clothes*, 1946; Quentin Bell, *On Human Finery*, 1948; W. H. Hulme, *Women's and Children's Garment Design*, 1948; Alison Settle, *English Fashion*, 1948; T. B. Veblen, *Theory of the Leisure Class*, 1948. See also BOOTS AND SHOES; CRINO-LINE; COSTUME DESIGN, THEATRICAL; EMBROIDERY; HAIR—*Hairstressing*; HATS; JEWELLERY; PLASTICS; TAILORING.

Dress, Academic. It is unlikely that scholars wore a recognisable D. until the early univs. were sufficiently well estab. to be in a position to draw up statutes for

the general conduct of both staff and students. From the time, however, from which the earliest statutes have survived, some rules as to D. have been included. These rules have followed the general principle that students must wear a simple, sombre, and inexpensive uniform, while masters, doctors, and rectors must be richly and expensively dressed.

Fourteenth-cent. statutes of the univ. of Florence insisted that students, whether noble or citizens, clerics or laymen, should wear long black woollen gowns, not too ample in cut and costing not more than 22 florins. Bologna in 1432 required students to wear black gowns of 'statutory cloth,' closed at the sides and fastened with a hook or pin at the neck. The rector, on the other hand, must line his gown and cape with a fur no less expensive than miniver or ermine in the winter, and with silk in the summer. Doctors were to wear long, ample, expensive gowns of 'muriche tintas,' a costly dye of a reddish purple colour. At Padua in the 15th cent. the Rector of Arts wore scarlet silk (often damask) in summer, and scarlet cloth, fur-lined, in the winter; while the Rector of the Jurists wore cloth of gold or gold-brocade and ermine. Doctors of Divinity wore violet tippets; in other faculties not only rectors but all doctors were allowed gold chains. In 15th-cent. It. univs. doctors wore a round cap lined and turned up

COSTUME AND FASHION FROM 20 BC TO AD 1937

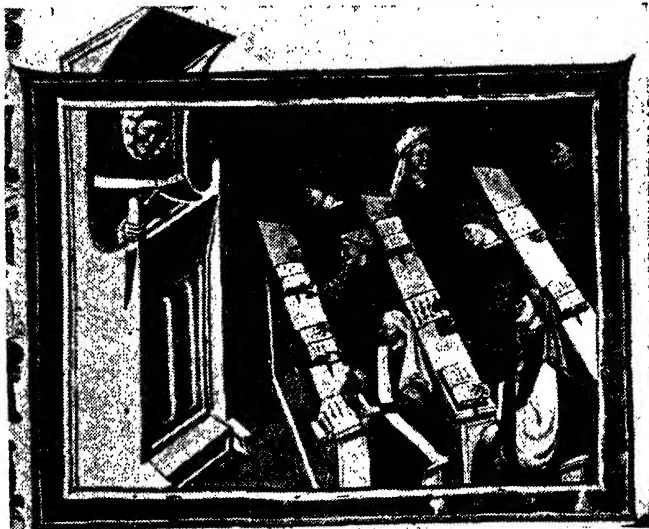
	BC		AD		AD
1. Celtic Chief	20	26. Lady	1280	61. Man	1615
2. Early Briton	100	27. Knight	1320	62. Puritan Man	1650
3. Romanised Briton	400	28. Lady	1320	63. Puritan Woman	1650
4. Saxon Thane	900	29. Nobleman	1350	64. Woman	1670
5. Saxon Child	900	30. Woman	1350	65. Gentleman	1675
6. Saxon Peasant	900	31. Man	1360	66. Lady of Fashion	1675
7. Anglo-Saxon Woman	1000	32. Citizen	1360	67. Gentleman	1720
8. Anglo-Norman Peasant	1080	33. Boy	1360	68. Lady	1730
9. Norman Knight	1080	34. Man	1370	69. Man	1745
10. Anglo-Norman Child	1100	35. Man	1370	70. Lady	1760
11. Norman Lady	1100	36. Boy	1420	71. Gentleman	1765
12. Anglo-Norman Girl	1120	37. Man	1450	72. Boy	1765
13. Norman Noble	1120	38. Lady	1460	73. Lady	1770
14. Norman Bow-man	1130	39. Man	1460	74. Lady	1775
15. Norman Woman	1150	40. Lady	1465	75. Gentleman	1785
16. Merchant	1180	41. Man of Fashion	1470	76. Lady in Riding Habit	1790
17. Man of the People	1200	42. Gentleman	1470	77. Man	1790
18. Little Girl	1230	43. Merchant	1490	78. Man	1800
19. Man of the People	1230	44. Gentleman	1500	79. Man	1830
20. Woman of the People	1250	45. Gentleman	1520	80. Woman	1835
21. Knight	1250	46. Lady	1540	81. Man	1836
22. Peasant	1270	47. Apprentice	1560	82. Woman	1860
23. Scholar	1270	48. Gentleman	1570	83. Man	1860
24. Merchant	1280	49. Lady	1570	84. Man	1862
25. Woman of the People	1280	50. Lady	1575	85. Woman	1885
		51. Man of the People	1580	86. Woman	1895
		52. Boy	1590	87. Man	1896
		53. Country Woman	1590	88. Man	1897
		54. Gentleman	1630	89. Woman	1910
		55. Child	1630	90. Woman	1930
		56. Man	1630	91. Woman	1937
		57. Boy	1635	92. Man	1945
		58. Cavalier	1635	93. Woman	1945
		59. Gentleman	1642	94. Woman	1957
		60. Lady	1640		



with ermine, and undergraduates the 'chaperon,' that fashionable cap of the early part of the cent. which consisted of a padded ring with 2 long hanging ends. These caps were later, as in the case of the similar cap which is a part of the Garter robes, worn slung over the shoulder, and a plain felt cap was worn on the head.

Following Italy, all anct univs. have drawn up similar statutes, including provisos that undergraduates should wear

Univs. which are modern foundations do not, as a rule, require their undergraduates to wear gowns, as the older univs. still do, but most of them have adopted a graduates' uniform—a black cap and gown, borrowed in design from the cap and gown of the anct univs., and with a hood which varies in colour with the faculty to which the graduate is attached. Chancellors and rectors of modern univs. usually wear scarlet or



Electa Editrice, Milan

ACADEMIC DRESS

Antonio da Budrio and his Pupils: Bolognese, early Fifteenth Century

distinctive gowns and caps, the design of which was always a modified version of the fashionable D. at the time when the statutes were drawn up. Masters and doctors have always been directed to wear silk and fur, and special colours have been associated with different faculties. The design of caps and gowns and the colours assigned to the faculties have varied therefore from univ. to univ. according to the date of estab. In the course of time these A. uniforms have become modified or conventionalised in shape, as, for instance, in the case of the Eng. 'mortar-board,' worn by both graduates and undergraduates, which is a modern stiffened version of a soft fashionable cap of the 2nd half of the 15th cent. Doctors in England wear a velvet cap which has kept more of its original character.

black gowns of rich material heavily braided with gold. The same practices are followed by most Amer. univs.

See H. Rashdall, *Universities of Europe in the Middle Ages* (new ed. by F. M. Powicke and A. B. Emden), 3 vols., 1936, which gives a reasonably comprehensive description of the A. D. in the various countries.

Dressmaking, the art or occupation of making dresses. The name dress is usually applied to any outer, complete feminine garment except a coat and skirt; it is sometimes restricted to a bodice and skirt, made up separately and later joined together at the waist, as distinguished from a robe or gown, which is generally made in one piece. The pattern of dresses depends entirely on the prevailing fashion, but the general characteristics of dresses suitable for

different occasions are, as a rule, very similar. Day, or street, dresses are usually shorter than formal afternoon or evening dresses. Day dresses are made of firm and durable material for winter wear; and cotton, linen, or rayon for summer wear. Formal afternoon dresses are made of fine woollens, velvets, or silks (natural or synthetic); while evening dresses are usually made in taffetas, satins, silks (natural or synthetic), tulle, lace, etc. The materials best suited for draping are the softer silks and woollens, etc., whereas taffetas, brocades, moiré, tulle, etc., stand away from the figure and look well in very full skirts and well-fitting bodices. Some materials are specially treated to resist creasing; and fabrics made from artificial fibres such as nylon, terylene (Dacron), and orlon have durability, strength, resistance to moth and mildew, and shaping qualities, under heat and moisture, formerly found only in woollen materials. They are also remarkably quick-drying. The present skirts for day wear have lengthened from the knee-length of 1946 to mid-calf. Ballerina, ankle-length, or full-length skirts are usual for evening wear; and trains are sometimes worn at weddings or state occasions.

The general procedure in D. is practically the same whatever the prevailing fashion may be. The type of dress having been decided upon according to the occasion for which it is required, suitable material should be selected, and the wearer's build (i.e. whether tall or short, slim or stout), age, and colouring must be carefully considered in relation to this. The rather short or stout figure should avoid big designs, horizontal stripes, yokes, tiered skirts, and frills, whereas the tall slim woman can wear these styles which tend to detract from her height. Widths of materials vary, cotton and rayon fabrics being from 27 to 36 in., and woollen materials usually from 42 to 54 in. Children's dresses are usually made of washable lightweight non-shrink material, with a mixture of wool and cotton or rayon, varying from 27 to 36 in. wide. Silks and velvets vary in width from 27 to 36 in. The amount of material required depends upon the style of the dress and on the cutter's ability to lay out the pattern economically on the material. Day frocks take from 3½ to 4½ yds of 36-in. material, and formal afternoon and evening dresses can take from 5 yds to 9 or more yds of material, dependent upon the fullness and style of the skirt and the length. Material for evening wear should be chosen in artificial light.

The dressmaker may of course be of amateur or professional status. If an amateur, she will begin by selecting a paper pattern from the pattern books pub. by the prin. paper pattern manufacturers and available to her through the shops; this she will make up in her own home. A pattern of this kind will be cut according to standard measurements. But the dressmaker may equally well be in the employ of a large estab., where the

pattern will first be drafted out from a designer's sketch (this is true of the wholesale manufacturer and of the *couturier*). Where a garment is made for an individual client particular care is taken to ensure accurate balance as well as correct measurements. For a normal figure only one side of the pattern is cut; in the case of any slight disproportion or one-sided deformity, the 2 sides are best cut separately. The pattern should be partially tacked together and tried on the client before the material is cut; any necessary adjustments may be made at this stage. Throughout D., both in the cutting of the pattern and of the material, it is imperative that an ample margin be left, any superfluous turnings being cut off when the garment nears completion. All fine materials, whether woollen, silken, or of artificial fibres, should be mounted on a suitable lining where the chosen style is a well-fitted one, and it is customary to line at least the bodice of a dress even where the skirt is full and flowing in order to keep the shape. Cotton garments are rarely lined, though sometimes the skirt may be stiffened by an underskirt of tarlatan or other similar material. At the houses of the foremost *couturiers* it is customary first to make the model in a light-weight lining material (a *toile*) before it is cut in the fabric selected by the designer. The cutting of the primary pattern to fit the client is frequently omitted if the skill of the dressmaker is sufficient to cut the lining accurately at once. But when a primary pattern has been accurately fitted on the client it should next be placed on the lining, care being taken to observe the straight and bias of the weave. The outline is then marked through, being pierced either with a stiletto or by a piercing wheel, and indications given of darts, pleats, gathers, tucks, and positions for embroidery. Tucks should be made before the material is cut. When the lining has been cut the material itself is cut out from the lining (with allowance for draping or folds). Each piece of material being matched to its lining, the 2 are tacked to each other, and the doubled material fitted together to form the back and front of the garment, bodice and skirt being kept separate at this stage. When the back and front of the bodice have been attached at the shoulders and beneath the arms, and the darts placed as indicated in the pattern, the bodice should be tried on and any necessary adjustments made. Boning is required in most *decoupage* styles, and the bones are inserted in the bodice lining. The seams are then joined, machined, and neatened, either by trimming with a pinking shear, or by oversewing, or by binding with thin silk or cotton. The sleeves (cut out and made up separately) are fitted at the same time as the bodice. The making of bodices and skirts is generally in the hands of 2 quite separate bodies of workers in large estabs.

To-day the dress trade consists mostly of wholesale houses. Owing to the high cost of labour, the individual tailor and

small dressmaker are disappearing. Ready-made clothes, designed by experts, and even by some of the most noted names in *haute couture*, are made in a wide range of sizes for commercial distribution. Paris still leads the world of fashion, but London, Rome, Florence, Vienna, New York, and Madrid are all gaining in importance, and Brit.-made materials are widely used by leading *couturiers*. Irish designers have recently shown interesting collections in locally-made fabrics.

To obtain a truly professional finish the home dressmaker must be prepared to take a thorough course of instruction, and every facility for this is now offered in the numerous domestic science schools, in the polytechnics and technical schools of London and the provs., in women's institutes and other educational centres.

Fashions change so swiftly that works on all but the fundamental principles of D. soon become out of date. A few books, however, which would be helpful to the student are: Margaretta Byers, *Designing*, 1939; R. K. Evans, *Dress: The Evolution of Cut and its Effect on Modern Design*, 1939; Eleanor King, *Successful Home Dressmaking*, 1952; Winifred Parker and Dora Seton, *Essentials of Pattern Drafting and Modelling*, 1952; Marian Corey, *McCall's Complete Book of Dressmaking*, 1954; M. B. Picken, *Singer Sewing Book* (2nd ed.), 1954; also *Vogue's New Book for Better Sewing*, 1953.

Prevailing fashions can be noted in the current issues of numerous periodicals for women, such as *Vogue*, *Vogue Pattern Book*, *Harper's Bazaar*, the *Queen*, *Vanity Fair*, *Weldon's Ladies' Journal*. See also DRESS; EMBROIDERY; FASHION; NEEDLEWORK; TAILORING.

Dreux, Fr. tn, cap. of an arron., in the dept of Eure-et-Loir, on the Blaise. It was once the chief city of the Gallic Durocasses. There is a beautiful church, partly 12th cent., with fine windows. In the precincts of the ruined castle is an exquisite chapel, built in 1816 as a sepulchre for the Orléans family (see ORLÉANS, DUKES OF). Shoes are manufactured. Pop. 14,200.

Drevet, Pierre Joubert (1661-1739), Fr. engraver, studied under Germain Audran at Lyons, and then under Gerard Audran at Paris. In 1696 he became engraver to the king, and an academician, 1707. His best portraits include those of Louis XIV, Cardinal Fleury, the Dauphin, Robert de Cotte, and Boileau.

Drevet, Pierre Joubert (1697-1739), son and pupil of above, surpassing his father. He was admitted to the Academy 1729. His portrait of Bossuet after Rigaud, 1723, is considered his masterpiece. Other works are portraits of Lecouvreur, Bernard, Cardinal Dubois, and Pucelle. 'La présentation au temple' is the best of his historical subjects. His engravings are mostly after Coypel, Boullongne, Restout, and Rigaud. See A. Firmin Didot, *Les Drevet*, 1876.

Drew, Samuel (1765-1833), writer, known as the 'Cornish metaphysician.' After a wild youth he joined the Wesleyan

Methodists (c. 1785) and became a local preacher. He early won fame by his *Remarks on Paine's 'Age of Reason'*, 1799, followed by *Essay on the Immateriality and Immortality of the Soul*, 1802. He ed. the *Imperial Magazine* from 1819. See autobiographical sketch prefixed to *Essay on the Identity . . . of the Body*, 1809.

Dreyfus Affair, The, notorious Fr. miscarriage of justice, in which anti-Semitism was a prominent factor. It covered the years 1894-1906. Capt. Alfred D. (1859-1935) was the son of a rich Jewish manufacturer in Paris. He entered the army, became an artillery capt., and was attached to the general staff. In 1894 he was arrested, accused of giving military secrets to the Ger. Gov. He was tried by court-martial sitting in secret, was found guilty, and condemned. He was degraded and transported to Cayenne, Devil's Is. His condemnation roused throughout the whole of France a great wave of anti-Semitism, and the majority of Frenchmen probably believed firmly in D.'s guilt in the early stages. Only his own relatives, and a minority of Radical intellectuals, notably Zola and Clemenceau, continued to assert his innocence. Some time after D.'s conviction, Piquart, a new head of military intelligence, decided that the document which had allegedly been written by D. was a forgery, the actual writer being most probably a Capt. Esterhazy. But the military authorities refused to act, presumably because, having once found D. guilty, they felt that a re-trial would be injurious to the prestige of the whole army. Piquart continued to press for action, and was subsequently sent out of the way to the hinterland of Tunis. In 1897 Esterhazy was accused of being the real author by Capt. D.'s brother. Esterhazy was tried by court-martial and acquitted, 1898. To Zola, as to all the Dreyfusards, it had now become apparent that the military staff would not allow justice to be done until forced to do so by pressure of public opinion. Zola, in an open letter, 'J'accuse . . .', to the president announced this fact in plain hard language. He was tried for libel, convicted, and fled the country. But his conviction was tantamount to a victory. Zola had achieved his object. As he said, with clear foresight: 'Truth is on the march and nothing can stop it.' The case was taken up by Clemenceau, and one of the documents was proved to have been forged. Henry, the chief of the intelligence dept, was placed under arrest, and immediately afterwards cut his throat, having confessed that he had fabricated the document. The struggle was now against the whole army, and for a short time the rep. itself was in danger. Brisson's cabinet, however, transferred the case to the Court of Cassation, and another court-martial was held at Rennes, where D. was again convicted, but obviously this was merely the last struggle of the military party, since extenuating circumstances were admitted and the sentence reduced. This was followed almost immediately by a free

pardon. The only common-sense conclusion which could be reached was that Esterhazy and Henry were the real culprits, and that the army was too obstinate to admit an obvious fact. The proceedings against D. were finally quashed in 1906, and he was again restored to the army, being given the rank of major. He was awarded the Legion of Honour in 1919. Piquart, who had suffered demotion on account of his consistent support for D., was also promoted. There is a considerable literature on the D. A., but see especially J. Reinach, *Histoire de l'affaire Dreyfus*, 1901-11; E. Zola, *Vérité*, 1903; A. Dreyfus, *Souvenirs et correspondance publiés par son fils*, 1936; L. M. Friedman, *Zola and the Dreyfus Case*, 1937; G. Chapman, *The Dreyfus Case: a Reassessment*, 1955; and M. Paléologue, *Journal de l'affaire Dreyfus*, 1956.

Dreyse, Johann Nikolaus von (1787-1867), Ger. locksmith and inventor; worked in a musket factory in Paris (1809-14), and on his return founded an ironware factory in Sömmerda. He manufactured percussion caps under a patent (1824), and invented improved firearms, notably the muzzle-loading needle-gun (1827), and the breech-loading one (1836). Adopted by the Prussian Army (1840), its superiority was shown in the war with Austria (1866). The modern repeating rifle has replaced it.

Driers, see PAINTS and VARNISHES.

Driffelt, Great, see GREAT DRIFFIELD.

Drift, Afrikaans (q.v.) word for a riv. crossing, or ford, in common use throughout S. Africa and the Central African Federation.

Drift, name applied loosely to recently formed superficial deposits laid down on the earth by rivers and by the Pleistocene ice sheets.

Drift, Continental, see CONTINENTAL DRIFT.

Drift Net, see FISHERIES.

Drill (*Mandrillus leucophaeus*) is a baboon of the same genus as the mandrill, but it differs from this hideous creature in the absence of bright colours on its muzzle and nose. It is a ferocious inhabitant of W. Africa.

Drin, riv. of Albania, formed by the joining at Kukës of the Black D. (rising in Lake Ohrid) and the White D. (rising in the Albanian Alps). It flows thence W. into the Adriatic.

Drina: 1. Riv. of Yugoslavia which rises in Montenegro and joins the Sava 65 m. W. of Belgrade. Length c. 250 m.

2. Prov. of the Yugoslav rep. of Montenegro (q.v.).

Drinker Respirator, see AEROTHERAPEUTICS.

Drinkwater, John (1882-1937), poet and playwright, b. Leytonstone, Essex. Educ. at the City of Oxford School, he worked in an insurance office for 12 years, being moved in 1901 to Birmingham. His first book, *Poems*, appeared in 1903, and was followed in 1906 by *The Death of Leander*. In 1909 he left insurance for literature, and was one of the founders in 1913 of the Birmingham Repertory Theatre. He

was best known for his chronicle plays, which include *Abraham Lincoln*, 1918; *Mary Stuart*, 1921; *Oliver Cromwell*, 1921; *Robert E. Lee*, 1923; and *Robert Burns*, 1925. *Bird in Hand*, 1928, is a comedy. His work had an important influence on the revival of serious drama. Among his numerous books of verse may be mentioned *Olton Pools*, 1916; *New Poems*, 1925; and *Summer Harvest*, 1933. He wrote a number of biographies, including studies of Byron (*The Pilgrim of Eternity*), 1925; Cromwell, 1927; Pepys, 1930; and Shakespeare, 1933; and 2 autobiographical works, *Inheritance*, 1931, and *Discovery*, 1932.

Dripstone, in Gothic architecture, a stone moulding projecting over the head of a doorway or window-opening, in order to throw off rainwater.

Driver, Samuel Rolles (1846-1914), divine and Heb. scholar. After a brilliant career at Oxford, he became Regius prof. of Hebrew and canon of Christ Church, 1883. D. was a member of the O.T. revision committee, 1876-84. His publs. include *An Introduction to the Literature of the Old Testament*, 1891; commentaries and notes on *Leviticus*, 1894, *Deuteronomy*, 1895, *Daniel*, 1900, *Genesis*, 1904; *A Hebrew and English Lexicon of the Old Testament* (with F. Brown and C. A. Briggs), 1906; *Modern Research as Illustrating the Bible*, 1909.

Driving (of animals). Many animals are used for traction in various parts of the globe, but the most common are the horse, the mule, the ass, and the ox; in very cold climates the reindeer and the dog are also utilised. Ever since man possessed domesticated animals he has made use of them in this manner: an element of sport has also been associated with D. from very early times. Thus the Romans were very fond of chariot races, as also were the Greeks. The custom of D. for pleasure, without racing, is of comparatively modern development; such a pleasure would have been impossible before Macadam and Telford revolutionised road-making. Spring carriages and level roads were a necessary corollary, but when these existed there sprang up a great number of D. clubs in Britain, of which the Bensington Driving Club, founded in 1807, was the pioneer. The most usual method of D. is with 1 horse; when 2 horses are driven, they are either abreast (the customary way) or in tandem; 4 horses are driven in 2 pairs, the foremost pair being the 'leaders', the other the 'wheelers'. Practice is essential in order to become a good driver, though the art of handling horses is also to some extent innate and instinctive.

Driving Licences. The Road Traffic Act, 1930, empowers co. and co. bor. councils to act as licensing authorities and to issue D. L. on payment of a fee of 5s. The Road Traffic Act, 1934, provides for tests of competence to drive, the fee for a test being £1 (2s. 6d. in the case of a test taken in an invalid carriage, a mowing machine, a pedestrian controlled vehicle, or vehicles exempt from duty under section 7 (4) of the Vehicles (Excise) Act,

1949). Details of the driving test are prescribed in the Motor Vehicles (Driving Licences) Regulations, 1950; an applicant for a test must satisfy the driving examiner, a Ministry of Transport official, that he is fully conversant with the *Highway Code* (see *HIGHWAY, Road Traffic Acts*) and that he is competent to drive, without danger to and with due consideration for other road users, a vehicle of the same class or description as that on which he is tested. Epilepsy, sudden attacks of disabling giddiness or fainting, or inability to read at a distance of 25 yds in good daylight (with the aid of spectacles if worn) a motor-car number plate containing 6 letters and figures, is a complete bar to the issue of a driving licence. D. L. must under penalty be signed by their holders. The Road Traffic Act, 1956, provided for a scheme whereby D. L. would be issued for 3 years at a cost of 15s., instead of the former 1 year at a cost of 5s.

Drocourt-Quéant Switch, in the First World War a key position of the Hindenburg line. It was the Brit. objective in the battle of Arras of April 1917, but was not taken. In Sept. 1918, after extremely bitter fighting, the 'switch' was, however, taken by storm.

Droeshout, Marten (Martin) (fl. 1620-1651), engraver, b. London of Flem. parents settled in England; worked chiefly for booksellers and engraving portraits. His most famous production is the engraved portrait of Shakespeare, prefixed to the first folio ed. (1623) of his plays. This was probably copied from the original painting made by D.'s uncle, which was discovered in 1892, and placed in the Shakespeare Memorial Gallery at Stratford-on-Avon. Other portraits were of Villiers, duke of Buckingham, the marquess of Hamilton, Dr Donne, John Fox, and Sir Thomas Overbury.

Drogheda (ancient **Droichead Atha**, the bridge of the ford), seaport, market town, and municipal bor. (till 1885 a parl. bor.) on either bank of the Boyne, 4 m. from its mouth in the Irish Sea, on the Great Northern Railway, 31½ m. from Dublin, in the cos. of Meath and Louth, Rep. of Ireland. The St Lawrence gateway still remains of the ancient walls, and there are relics of the Augustinian abbey (1206) and the Dominican monastery (1224). When Cromwell captured the town in 1649 most of the garrison were butchered. In 1690, after the famous battle of the Boyne, D. surrendered to William III. It forms the gateway to the valley of the Boyne, a place of historical and archaeological interest. The salmon fishery in the Boyne has its centre here, and agric. produce is shipped to Liverpool. The depth of water alongside the N. quay is 21 ft at highest and 14 ft at lowest tide. Recently the former flourishing linen and damask industries have been revived, and manufs. include cement, industrial oils, boots, margarine, beer, and flour. Pop. 16,779.

Drohobych (Ukrainian **Drohobych**, Polish **Drohobycz**): 1. Oblast in Galicia (W. Ukraine) adjacent to the Polish frontier,

on the N. slopes of the Carpathian Mts, traversed by R. Dniester and partly covered with mixed forests. It has oil, natural gas, and salt deposits. There are oil and gas extraction and chemical and food industries. The principal towns are D., Horislav. Area, 4000 sq. m.; pop. 1,000,000 (mostly Ukrainians).

2. Cap. and econ. centre of the above, 40 m. SW. of Lvov. It is the centre of the oil industry in the Ukraine (since 1900), a railway junction, and a local cultural centre. It has been known since the Middle Ages. Pop. (1931) 33,000 (before the war mostly Jews and Poles, now Ukrainians).

Drohobycz, see **DROGONYCH**.

Droichead Atha, see **DROGHEDA**.

Droit Administratif, that system of law which in France gives an over-riding authority to the state tribunals over the ordinary law. It exists also in other European states, but is not so marked a feature as in France. There is no precise equivalent in English; but it is defined in general terms by the Fr. authorities as 'the body of rules which regulate the relations of the Administration or of the Administrative authority towards private citizens.' D. A. is in fact that portion of Fr. law which determines: the position and liabilities of all state officials; the civil rights and liabilities of private individuals in their dealings with officials as the representatives of the state; and the procedure by which those rights and liabilities are enforced. The modern D. A. of France has grown up and assumed its existing form during the 19th cent., being the outcome of more than a cent. of revolutionary and constitutional conflict. The essential characteristics of D. A. are: the rights of the state are determined by special rules, i.e. as opposed to the ordinary law; the ordinary law courts have no jurisdiction in matters concerning the state, and administrative litigation is thus determined by the administrative courts; the coexistence of judicial courts and administrative courts results in a conflict of jurisdiction in which the latter courts prevail; and state officials are protected against the ordinary law. See A. V. Dicey, *Law of the Constitution*, 1885; G. Jéze, *Les Principes généraux de droit administratif*, 1904; Seissier, *La Responsabilité de la puissance publique*, 1906. See also **STATE, ACTS OF**.

Droit de Seigneur, see **JUS PRIMAE NOCTIS**.

Droits of Admiralty, see **ADMIRALTY, DROITS OF**.

Droitwich, town and municipal bor., on branch lines of 2 railways, 6 m. NNE. of Worcester, in Worcestershire, England. It is famous for its brine springs or 'wyes', which are mentioned in the Domesday Book. The brine is used in connection with the treatment of rheumatism and allied complaints, and in an open air sea-bathing lido. Pop. 6632.

Drôme, dept. of SE. France, bounded on the N. and NE. by Isère, on the E. by Hautes-Alpes, on the SE. by Basses-Alpes, on the S. by Vaucluse, and on the W. by the Rhône. Apart from the wide and

fertile Rhône valley, the dept is composed of offshoots of the Alpes Cottiennes (see ALPS). The mt. valleys are frequently steep and irregular, and the hill slopes are in some places fertile and wooded, whereas in others they are dry and barren and support nothing except sheep. The chief products are maize, potatoes, buckwheat, mulberries, fruit, truffles, and wine (l'Hermitage, Châteaufort). There are silk, leather, chemical, foodstuff, tanning, and paper industries. The chief tn is Valence (q.v.), and other tns of importance are Die, Nyons, Montélimar, Crest, and Romans. Area 2533 sq. m.; pop. 275,300.

Dromedary, or *Camelus dromedarius*, species of camel which is distinguished



DROMEDARY

by its solitary hump, *C. bactrianus* having two. It is a large ruminant which occurs in Arabia and is never found wild; the hump is adipose (fatty), and the body is covered with hair. See also CAMEL.

Dromia, genus of crabs in the family Dromiidae, has well-defined orbits into which the eyes can be retracted; the 4th and 5th pairs of trunk-legs are small and are held dorsally, and the carapace is shaggy. *D. vulgaris* is found on Brit. and Mediterranean shores.

Dromore, par. and tn of NW. co. Down, N. Ireland, on R. Lagan, 17 m. from Belfast. The present cathedral was erected after the destruction of the tn in the insurrection of 1641, and has the tombs of Jeremy Taylor (1613-67) and other bishops. Linen is manufactured. Pop. 2400.

Drone, see BEE.

Dronfield, par. and tn of Derbyshire, England, 6 m. from Chesterfield, on the R. Drone, in a colliery dist. Iron and steel goods are manufactured. Pop. 7500.

Dronning Maud Land (Queen Maud Land), long. 20° W. to 45° E. and in Antarctica (q.v.); claimed by Norway. Norwegian and Ger. expeditions visited the area before the Second World War; in 1949-52 the Norwegian-Brit.-Swedish expedition explored the 'Maudheim' area.

Much valuable scientific research was done. See L. Christensen, *Such is the Antarctic*, 1935; J. Gjaever, *The White Desert*, 1954.

Dronte, obsolete name, of Dutch and Fr. origin, for the dodo (q.v.).

Drop-forging, or die-forging, a process which has replaced the old drop-hammer used in swaging die-work, striking up sheet metal, etc. Many of the operations performed at the smith's anvil can be done better and more quickly by such a machine as the die-forging. A white-hot mass of metal is placed in the die, and the blows of the hammer force it into the same shape as the die; the metal goes into the die as a shapeless mass, so that when hammered some of it is squeezed out of the side of it, and if this is not checked will prevent the die from closing, and so spoil the stamping. To obviate this possibility the metal is placed on a die of the same shape as the object, but pierced right through; when hit by the hammer the forging is forced through the die, thus leaving the stripped fln of metal behind, and the forging is then proceeded with. In the manuf. of automobiles, aircraft, and other machines having many small parts the forgings are stamped so accurately that very little metal is wasted by machining in the shops, thereby saving both time and money. See H. Hayes, *Drop Forging and Drop Stamping*, 1923; S. Johnson and J. Warby, *Drop Forging Practice*, 1937.

Dropsy, shortened form of *hydropsy*, an abnormal accumulation of serous fluid in the tissues or cavities of the body. Serum is the colourless liquid constituent of blood, and under normal conditions is exuded through the walls of the blood capillaries into the tissues; a part of the exuded fluid is returned to the blood-stream by the veins and some by the lymphatics. When from any cause serum is exuded in abnormal quantity or is not returned to the blood stream to a sufficient extent, collections of fluid are apt to form. D. is therefore not a disease itself so much as a sign of dysfunction due to disease. Half of the cases of general D. are due to heart disease, and many are due to kidney disorders. Other causes may be weakening of the walls of the capillaries, by which exudation is increased, or, in the case of local D., any obstruction of a vein which causes increased blood pressure. *Oedema* is D. of the tissues rather than the body cavities and may be limited in area; *Anasarca* is the term applied to generalised D. of the subcutaneous tissues. *Ascites* (q.v.) is an accumulation of serum in the abdominal cavity. *Hydrocephalus*, or water on the brain, is an accumulation in the brain-cavities. *Hydrothorax* is a D. in the pleural cavities. *Hydropneumothorax* is an accumulation in the membranous sac enclosing the heart.

Dropwort, common name for the perennial herb, *Filipendula vulgaris*, family Rosaceae, occurring in dry pastures in Britain. Has small white flowers resembling those of the meadow-sweet. Water-dropworts are *Oenanthe*

fastuosa, *Or. lachenalii*, *Or. crocata*, and *Or. aquatica*, all toxic umbelliferous plants.

Drosera, genus of the Sundew family (Droseraceae) which comprises nearly 100 beautiful insectivorous plants, growing in boggy places in all parts of the world. The leaves are covered with glandular hairs, whereby insects are trapped and digested. In Britain there are 3 perennials, *D. intermedia*, a common bog-plant; and *D. anglica*, found chiefly in Ireland; and *D. rotundifolia*, the common or round-leaved sundew. The latter is an acrid and caustic plant used in Italy in making the liquor called Rossoli. See INSECTIVOROUS PLANTS.

Droste-Hülshoff, Annette Elizabeth, Frein von (1797-1848), Ger. poetess, b. near Münster. Although she is now considered one of the greatest Ger. nature poets, she was not recognised in her lifetime. Her book of nature poems *Heidebilder*, 1844, is realistic in its exact description of the countryside. She was also preoccupied with the supernatural, as is shown by her cycle of religious poems *Das geistliche Jahr, nebst einem Anhang religiöser Gedichte*, 1860, and her short story *Die Judenbuche*, 1842. Her *Gesammelte Werke* was pub. by Schulte-Kemminghausen (5 vols., 1925-30). See L. Schücking, *Annette von Droste-Hülshoff, ein Lebensbild*, 1862; K. Schulte-Kemminghausen, *A. von Droste-Hülshoff*, 1939; Th. Steinbüchel, *A. von Droste-Hülshoff*, 1950. See also her letters pub. by Schulte-Kemminghausen, 1944.

Drouais, family of Fr. artists, the 3rd being the most famous:

Hubert (1699-1767) was intimate with Nattier. Van Loo, and Oudry. His portraits include those of the painter Christophe and of the sculptor Robert le Lorrain.

François Hubert (1727-75), son of above, painted children's portraits, and did much work in Louis XV's reign. Examples are portraits of Mme de Pompadour, Mme du Barry, Mme Clotilde, Marie Antoinette. His 'Child playing with a Cat,' 1767, is characteristic.

Jean Germain (1763-88), son of above, pupil of David and Brenet. He won the Academy prize (1874) with 'Christ at la Cananéenne.' While in Rome he painted 'Marius à Minturnes,' 'Philoctetes on the Island of Lemnos,' and 'A Wounded Gladiator.' See Chaussard, *Notice sur Drouais*.

Drouet, Jean Baptiste, Comte D'Erlon (1765-1844), Fr. soldier, b. Reims. He fought for the rep. and the empire, playing an outstanding part in the Peninsular campaign. When Napoleon escaped from Elba he seized and held the citadel of Lille for him, and subsequently commanded the first *Corps d'Armée* at Waterloo. D. left France at the restoration, but returned after the July revolution, being made governor of Algiers (1834-5) and a marshal (1843).

Drought, or **Drouth** (O. E. *drugað*, from *drugian*, to dry), dryness, want of rain or water. The term is especially applied to such lack of rain and moisture as affects

the earth and its fertility, preventing the growth of plants. 'Periods of more than 14 consecutive days without measurable rain' were fixed by Symons (1838-1900) as the exact time that must elapse without rain to cause an 'absolute drought.' See Symons' *British Rainfall* pub. annually since about 1863, and his *Meteorological Magazine*. From about 1714 to 1750 severe D.s in England brought calamitous results with famine threatened and a series of devastating epidemics. There is reason to believe that even more acute D.s occurred in the Middle Ages, when at least twice the R. Thames could be crossed dryshod; there is said to have been no harvest in 1177. Hardship, famine, and disease are often caused by D. and the cholera year of 1854 was very dry. In recent years England has had 2 major droughts, in 1921 and 1933-34; and a critical position was reached also in 1947 when, although rainfall until the end of July was heavier than normal, the following 3 months were dry, and events suggested that improvement in the methods of conserving water is necessary. The Sahara and Kalahari deserts of Africa, the Gobi desert of Central Asia, Great Salt Lake district in N. America, and certain regions of India and China suffer from D. nearly all the year round. The regions which suffer from almost continual D. are often shut off by high mountain ranges from the influence of winds carrying moisture. So far, meteorology has not advanced to the stage at which it is possible to forecast droughts in normally humid regions for any appreciable period ahead. See C. E. P. Brooks and J. Glasspoole, *British Floods and Droughts*, 1928; I. R. Tannehill, *Drought: its Causes and Effects*, 1948.

Drowning. The cause of death by D. is asphyxiation, and the entrance of water into the lungs. After death the skin of a drowned person presents the appearance known as 'goose skin,' or *cutis anserina*, the face is exceedingly pale, a frothy liquid is found in the lungs and air passages, and water in the stomach; froth is also present at the mouth and nose. Complete insensibility supervenes in from 1 to 2 mins., and death in about 5 mins., though persons have been known to recover who have been immersed for a considerable length of time. The D. person rises to the surface by his own efforts a variable number of times, not necessarily the three of the popular fallacy. Dr W. Hawes was instrumental in founding the Royal Humane Society (q.v.) which has been the means of rendering the principles of life-saving widely known. The methods for the restoration of persons apparently drowned are described under ARTIFICIAL RESPIRATION. When the patient is coming round, hot water bottle should be applied; on his regaining consciousness teaspoonfuls of hot water, brandy, etc. can be administered. In older times D. was a 'capital punishment; it was abolished in England about 1620, in Scotland in 1685, in Switzerland 1652, in Austria 1776, and in Ireland 1777. For methods of rescuing persons

who are D., see under SWIMMING, *Life-saving*.

Droylsden, par. and tn of Lanes, England, 4 m. from Manchester. The manufs. of cottons and chemicals are important, and there are drugworks and paint manufs. Pop. 26,660.

Droz, Antoine Gustav (1832-1895), Fr. novelist, b. Paris. He studied painting, but turned to literature with articles in *La Vie parisienne*. He was author of sev. popular and brilliant novels: *Monsieur, Madame et Hébé*, 1866; *Entre nous*, 1867; *Le Cahier bleu de Mlle. Cibot*, 1869; *Les Étangs*, 1875; *Tristesses et sourires*, 1884.

Drug, any simple medicinal organic or inorganic substance, used as an ingredient of a mixture or by itself. In a more restricted sense, applied to narcotics such as opium or hashish. The narcotic control conventions are administered by an international authority, the Permanent Central Opium Board. Anxieties recently expressed by the Board serve to emphasise the apparent success of Brit. measures for controlling the use of dangerous D.s. Measures controlling the consumption in Britain of a range of dangerous D.s. were strengthened by regulations which came into force on 1 Jan. 1949. The regulations restrict the authority to dispense dangerous D.s., and impose on pharmacists the responsibility for satisfying themselves of the genuineness of all prescriptions which they dispense for a dangerous D. D. addiction does not present a serious problem in the United Kingdom. The prin. D.s. of addiction are morphine, heroin, and petidine. Few use cocaine and the number who do so is decreasing. The domestic manuf. of dangerous D.s. is controlled by a system of licensing, and supervision is exercised by Home Office inspectors over persons authorised to possess and use dangerous D.s.

Drugget (Fr. *droguet*), common felt or coarse woollen fabric, often printed on one surface. The heavier kinds are chiefly used for covering carpets (hence called 'crumb-cloths'), as a substitute for carpets, or as a lining or border. The lighter kinds are used for table-covers. A strong dress-fabric of this name was formerly used largely for petticoats and workmen's aprons.

Druids, caste of priests among the Celts of ant. Gaul, Britain, and Ireland about whom there are many traditions, no doubt largely modified by legend, especially in the case of the Irish. The long accepted derivation of D. from the Gk *Drus*, oak, is now doubted. The Welsh and Breton *derwydd* and *drouic* are not original forms. The Lat. *druidi* points to a Gaulish *druids*, Irish *drui*, *druid*, connected with learned, knowing. Caesar gives the first circumstantial account of the D.: he tells us that all nobles and men of dignity in Gaul were among them; they were the law-givers and priests; the caste was not hereditary; the chief D. was elected; they could inflict heavy punishment for disobedience; they had a written language, believed in the immortality of the soul, and were learned in astrology and the natural sciences. Caesar may have over-

estimated their powers. Britain was their H.Q., only a yearly meeting being held in Gaul; the Gaulish novices came for training to Britain. Human sacrifices were generally attributed to D., and they practised divination by the flight of birds and by the dying convulsions of their victims. The oak tree was sacred, and all its fruits, especially mistletoe; religious ceremonies were performed in oak groves. Pliny describes their practising of medicine and sorcery, and their cutting the mistletoe, robed in white, with golden sickles, and sacrificing white bulls. Strabo tells of their golden collars and armlets, describing them as bards and soothsayers. Tacitus records their last stand, AD 61, in Mona (Anglesey); their sacred groves were cut down, and the suppression of D., the object of Rome since Augustus, was accomplished, at any rate in England and Wales. Their later history is confined to Ireland. Anct. Irish literature has many tales about them, much overlaid with legends and traditions of the early Christian struggle with paganism. They are credited with sorcery and witchcraft, and with power of changing the weather; the archdruid appears as a leaping juggler, tossing swords and balls in the air; in a famine, the D. would bid the son of a sinless married couple to be sacrificed and his blood mixed with the soil; Druid enchantment caused the death of King Cormac; they were also bards and poets. There are also legends of the struggle of the D. against St. Patrick and St. Columba. See P. W. Joyce, *Social History of Ancient Ireland*, 1903; D'Arbois de Jubainville, *Les Druides et les dieux Celtiques*, 1906; D. Wright, *Druidism*, 1924; T. D. Kendrick, *The Druids*, 1927.

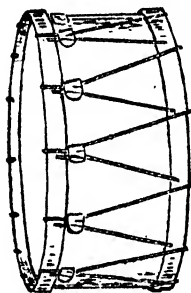
Drum, musical instrument of percussion. Although it is said to have been introduced into Europe about the time of the Crusades, nevertheless instruments which strongly resemble it were known during the early days of the Rom. empire. Obviously one of the most primitive of musical instruments, it forms almost exclusively the sole musical instrument of some savage peoples. The tom-tom, a form of D. played with the fingers, is the chief music of many primitive tribes, and this instrument is also known to have existed in Egypt considerably more than 1000 years BC. There are 3 main varieties of D.: (1) the common or side-D., (2) the bass-D., and (3) the kettle-D.; but variant forms of each type occur, such as the tambourine, a variant of (1), the tenor-D. of (2), and the naker, of (3), this last a primitive form used on horseback. The side-D. is, as its name implies, worn at the side of the player, and is played upon the upper head with 2 sticks. It is a military and orchestral instrument, like the bass-D., which is very similar in construction, but larger. The latter is played with 2 sticks, both sides being used. The only instrument of real musical value is the kettle-D. This instrument is composed of a cauldron-shaped shell or kettle of copper or brass, over the mouth of which is drawn tightly a single head of skin attached to an iron ring. By means of

screws it is possible to tune this D. within narrow limits, and this is the only D. producing notes of definite pitch. In a full orchestra 3 are usually found, 1 with a compass from F to C, the 2nd from B to F on the bass stave, the 3rd intermediate. A variety of sticks covered with different materials can be used to produce a harder or softer impact. The kettle-D. is carried by the cavalry, this being the only use made of it in military circles.

Drum-major, the 1st or chief drummer in a regimental band, the officer who leads a drum-corps or band, directing its movements, and regulating the pace when on the march. He attends to the bugle calls and teaches the under-drummers. The D. ranks with the sergeants of the

was opened in 1910 by Jesse Gouge. D. was named after Samuel D., a pioneer of the Alberta coalfields. Incorporated as a vtl. in 1913, as a tn in 1916, and as a city in 1930. Prin. industries are coal-mining and dairy products. Pop. 2574.

Drumlins, or **Drumlings** (from *drum*, ridge), in geology, smoothly rounded, oval hills of compact, unstratified, glacial drift or boulder-clay, apparently deposited and piled up beneath the Pleistocene ice-sheets. They are usually about $\frac{1}{2}$ m. long, 100 to 200 ft high, the longer axis always lying parallel to the former local glacial motion. They occur in America in Massachusetts, round Boston harbour, in W. New York, SE. Wisconsin, and the lake region, and in the parts of Europe and



MODERN DRUMS

Military bass drum: narrow shell side drum, shown upside down to expose the snares; and orchestral kettle drum and sticks.

line. His official designation, from 1881, was sergeant-drummer or sergeant-piper (as the case might be), the reversion to the old name being made by the War Office in 1928. The rank is over 3 centuries old and is to be traced as far back as 1632, in which year it is mentioned by a music writer named Cruso; 7 years later there was a D. on the strength of the Royal Scots, and a few years later on that of the Coldstream Guards.

Drum of the Ear, see **TYMPANUM** and **EAR**.

Drumcliff, par. of NW. Sligo co., Rep. of Ireland, on the D. Bay, 4 m. from Sligo. It has a carved Celtic cross and a round tower. D. is the burial-place of the poet W. B. Yeats. Pop. 5000.

Drumclog (Gaelic, ridge of stone), moorland tract of Lanarkshire, Scotland, 17 m. from Lanark. An obelisk commemorates the defeat of Claverhouse by the Covenanters, or Cameronians (1679), near London Hill. See *Scott's Old Mortality* for a description of the battle.

Drumheller, city of Alberta, Canada, 85 m. NE. of Calgary on the Calgary-Saskatoon and Calgary-Edmonton lines of the Canadian National Railway, close to the famous Dinosaur Valley. Coal was first discovered in the D. valley near the mouth of Rosebud Creek at Rosedale by Peter Fidler in 1793. The first coal mine

Asia lying N. of the terminal moraine of the Continental ice-sheet. A good example exists between Belfast and Lisburn, Ireland.

Drummond, George (1687-1766), soldier. He fought against the Pretender at Sheriffmuir (1715). He was lord provost of Edinburgh for the first time in 1725, being chosen 6 times in all. D. was energetic in resisting the rebels of the '45 outbreak, joining Cope after the surrender of Edinburgh.

Drummond, Henry (1851-97), scientist and theologian. He travelled widely, *Tropical Africa*, 1888, and *Travel Sketches in our New Protectorate*, 1890, being the resulting works. His *Natural Law in the Spiritual World*, 1883, and *The Ascent of Man*, 1894, were attempts to reconcile evangelical Christianity and evolution. D. was a man of great personal fascination, but his reasoning in his scientific works is by no means unassailable.

Drummond, James (1816-77), historical and genre painter, studied under Sir Wm Allan (q.v.) at Edinburgh. His first exhibit in the Royal Scottish Academy was 'Waiting for an Answer', 1834. He became a R.A., 1852, and curator of the Scottish National Gallery, 1868. Among his best works are 'The Vacant Chair', 1837, 'The Porteous Mob', and 'The Covenanters in Greyfriars Churchyard.'

Drummond, James (1835-1918), Unitarian theologian, educ. at Trinity College, Dublin. He became a colleague of Gaskell at Manchester (1859-69), and then professor of theology at Manchester New College, London (1869), succeeding Martineau as principal (1885-1906), and moving with the college to Oxford (1889). His works include *Introduction to the Study of Theology*, 1884; *Via, Veritas, Vita*, 1894; *The Pauline Benediction*, 1897; *Life and Letters of Dr. Martineau* (with C. B. Upton), 1902; *Character and Authorship of the Fourth Gospel*, 1904; *Studies in Christian Doctrine*, 1908; *Paul: his Life and Teaching*, 1911.

Drummond, Sir James Eric, see PERTH. 16th EARL OF.

Drummond, Thomas (1797-1840), inventor and administrator, entered the Royal Engineers in 1815, but in 1820 accepted Col. Colby's offer to join him in an ordnance survey of Great Britain. It was in 1825 near Belfast that he first tested the power of his lime-light apparatus (Drummond light), being able to see it at a distance of 67 m., and 4 years later he adapted it for use in lighthouses. D. also invented an improved 'heliostat,' a mirror especially designed to facilitate the turning of rays of light in a certain direction. Appointed superintendent of the boundary commission in 1831, he became under-secretary for Ireland in 1835, when he discharged his duties so as to win universal respect. See also HELIOGRAPH.

Drummond, William (1585-1649), poet, b. Hawthornden. He obtained his M.A. degree at Edinburgh Univ., studied law and literature in Bourges and Paris, and spent the greater part of his life at his 'sweet and solitary seat' of Hawthornden, dividing his life between poetry, royalist pamphlets, and melancholy. There he was visited by his friend Ben Jonson, and preserved notes which, first printed in full in 1832 as his *Conversations*, form a pleasant and instructive chapter of literary hist. D. has been called the Scottish Petrarch because of his passionate sonnets (1616) inspired by the early death of his first love, Mary Cunningham; yet he is in no sense a national poet, for his inspiration and much of his sensuousness are drawn from Spenser, and his poems prove him to have been well acquainted with the works of Sidney and many It. poets. *Flowers of Simon*, 1623, contains his 'Cypresse Grove,' a musical poem on death, which best preserves the quiet gloom of D.'s mind, and is free from extravagant conceits which sometimes mar his verse. Others of his works are *Forth Feasting*, 1617, and, in prose, *The History of Scotland, from the year 1423 until the year 1542*, 1655, known also as *History of Scotland during the Reigns of the Five Jameses*. See D. Masson, *Drummond of Hawthornden*, 1873; A. Joly, *William Drummond de Hawthornden*, 1935.

Drummond, William Hamilton (1778-1865), poet and Unitarian minister, b. Larne, Antrim. He wrote poems, *The Battle of Trafalgar*, 1806; *The Giant's Causeway*, 1811; *The Pleasures of Benevo-*

lence, 1835; *Ancient Irish Minstrelsy*, 1852; an Eng. metrical trans. of Irish ballads in J. Hardiman's *Irish Minstrelsy*, 1831; polemical works, such as *The Doctrine of the Trinity*, 1827; *Original Sin*, 1832; and biographies of A. H. Rowan, 1840, Michael Servetus, 1848, and others.

Drummond, William Henry (1854-1907), Canadian poet, b. Antrim. In 1864 he went to Canada with his parents; he was educ. at Montreal High School, and studied medicine at Bishop's College, Lennoxville, becoming Prof. of Medical Jurisprudence. Much of his verse was written in the Eng. dialect spoken by the Fr. Canadians, his works including *The Habitant*, 1897; *Phil-o-Rum's Canoe*, 1901; *The Voyageur*, 1905; and *The Great Fight*, 1908.

Drummondville, city in Quebec, Canada, 47 m. NW. of Sherbrooke. Prin. industries are synthetic textiles, clothing, and electrical apparatus and supplies. Pop. 26,400.

Drummoissie Moor, see CULLODEN.

Drunkenness, or **Inebriety**, may vary from a state of hilarity, mental excitement, or exaltation to complete coma or unconsciousness, ending possibly in death. It may be an occasional lapse or an habitual and chronic state of alcoholism. It may be the cause of foolish and disorderly behaviour, or the symptom of deep-seated fatal diseases, or of insanity. It may lead to a fine for a condition of helplessness in the streets, or to a long term of imprisonment or capital punishment for brutal assault or a murder. Medically or physiologically D. is a condition of intoxication or poisoning due to the consumption of an excessive amount of alcohol, either in rapidly taken doses, or spread habitually over a period of time, with a cumulative effect. The outward signs of alcoholic intoxication, the thickness of speech, blurred or double vision, inability to maintain equilibrium, etc., are due to paralysis of various parts of the nervous system. Pathologically it includes acute alcoholism, in various stages leading to complete coma, delirium tremens, and chronic alcoholism with its most usual results of various profound nervous disorders, impaired digestive powers, cirrhosis of the liver, etc. A proof of the effect of alcohol on the nervous system is found in the fact that in post-mortem examinations traces of it may be found in the cerebrospinal fluid when it has disappeared in every other organ. The modern treatment for D. is on psychological lines, the theory being that D. is usually an attempt to escape from, and is thus a symptom of, mental conflict. If the underlying cause can be cured the D. disappears. Viewed racially it may at once be recognised that D. is far more prevalent among the races of N. damp, and cold climates than in the S. Scandinavia, N. Russia, and Scotland are in marked contrast to Italy, Spain, Portugal, and S. France. The comparison of national drink bills, based on consumption per head, is usually fallacious; it is the kind of alcohol taken, i.e. whether light wines or beers or ardent spirits, and

the manner of consumption, i.e. as part of the daily diet or crowded into a few hours, that make the difference as far as the national health is concerned. The inter-relation of hereditary alcoholism is not thoroughly worked out. To some the result of past alcoholism should tend to an immunisation, racially if not individually. In the eyes of the law, D. does not affect a man's civil capacity; he may make contracts, wills, marriages, etc., as long as he is capable of knowing what he is doing and no undue advantage is taken of his state. So, too, as regards criminal responsibility, but in those crimes where a criminal intention is essential, his state may be taken into consideration. *See also* CRIMINAL LAW. As an offence in itself, the law looks first to the effect: it is not an offence to be drunk *per se*, but only if it be accompanied by disorderly conduct in a public place or leads to a breach of the peace; or it is an offence to be drunk and incapable in a public place, or drunk in a licensed house, or when in charge of a vehicle of any kind or the like. Stringent laws regulate the offence of selling drink knowingly to drunken persons or to known inebriates, or of permitting drunken persons to remain on licensed premises. Finally, the law takes into account habitual drunkards in the technical phrase, inebriates. They may be voluntarily committed to abstain from visiting licensed houses for a maximum period of 2 years, which can be extended on application.

Drury, Dru (1725-1803), naturalist. His cabinet collections of home and foreign insects were much prized, and his writings did much for the advancement of entomology. Linnaeus, J. E. Smith, Kirby, and others thought very highly of D. His chief works are: *Illustrations of Natural History*, 1770-82; *Directions for Collecting Insects in Foreign Countries*, 1800; *Thoughts on the Precious Metals* . . . 1801; *Exotic Entomology* (ed. by J. O. Westwood with Memoir), 1837. Moses Harris drew the many plates and figures accompanying these works.

Drury, William Price (1861-1949), soldier and author, b. Devonport. He joined the Royal Marines, in which he rose to be a lieutenant-colonel, after much service abroad; from 1900 to 1901 he was with Naval Intelligence. He wrote a successful play, *The Flag Lieutenant*, 1908; *In Many Ports: the Memoirs of a Marine*, 1926; and *Eight Bells*, 1932. He was awarded the C.B.E.

Drury Lane, London street connecting Aldwych and High Holborn, possibly on the site of a road going back to Dan. times, taking its present name from Drury Place, a 15th-cent. house owned by the Drury family. In this house the earl of Essex (q.v.) planned his rebellion of 1601. On its site in 1804 Philip Astley (q.v.) built the Olympic Pavilion. It was in D. L., just by its theatre, that Nell Gwyn (q.v.) sold oranges from a very early age. It was one of the earliest places visited by the Great Plague. Many famous names are connected with this once aristocratic quarter, among them John Donne,

Charles Lamb, and Thomas Campbell. *See also* ALDWYCH; DRURY LANE THEATRE.

Drury Lane Theatre, famous London playhouse in Covent Garden, the oldest existing in London and the first theatre in the world to receive a royal charter, deriving its name from Drury Lane (which runs behind it), once owned by the Drury family. It was originally called Theatre Royal, Brydges Street (now Catherine Street). A patent was granted by Charles II in 1663 and Killigrew opened there the same year with his company called the 'King's Servants.' A fire destroyed this first house (1672), and it was rebuilt by Wren (1674). In 1682 the 'Duke's Servants' under Davenant joined Killigrew, and both companies played together at Drury Lane. There was a secession under Betterton to Lincoln's Inn Fields (1694), and by 1709 the theatre was closed. Collier took over the management in 1710, Lacey in 1744, soon being joined by Garrick. Among noted actors who performed here in the 18th cent. were Colley Cibber, Doggett, Wilks, Quin, Macklin, Pritchard, Kitty Clive, 'Peg' Woffington, and Mrs Siddons. Garrick was manager from 1746 to 1776, opening with Dr Johnson's prologue (1747), and the triumphs of himself and his company renewed the prosperity of the theatre. In 1784 Kemble made his first London appearance as Hamlet, becoming manager in 1788. The house was pulled down in 1791, reopened by Sheridan (1794), but again burnt down in 1809. The present house, built by Wyatt, was opened in 1812, with a prologue by Lord Byron. The committee's advertisement for this prologue gave rise to the *Rejected Addresses* of J. and H. Smith. The interior was rebuilt in 1822, the present seating capacity being about 2500. Kean and Macready won fame here in the early 19th cent. Famous for ann. pantomimes held there under the management of Sir Augustus Harris and Arthur Collins, for musical comedy, and spectacular pieces and melodrama, such as *Ben Hur*, 1902; *The Whip*, 1909; *Everywoman*, 1913; *Cavalcade*, 1932. In 1917 it was used by Sir Thomas Beecham for opera. Now it is entirely devoted to musical plays. *See* Pepys's *Diary*, 1663; E. Stirling, *Old Drury Lane*, 1881; J. Doran, *In and About Drury Lane*, 1881; W. Macquenn-Pope, *Theatre Royal: Drury Lane*, 1946.

Druses (Druzes), anet race and religious sect of Syria, of much-disputed origin. Their numbers are impossible to estimate with any degree of accuracy, but they have been assessed at 110,000. They live chiefly in the mt regions of Lebanon and Anti-Lebanon and in the dist. of Hauran. They call themselves 'Muwahhidin' (Unitarians), but are known to others as 'Druses,' a name probably derived from Ismail Darazi or Durzi (confessor of Hakim), their first apostle in Syria. He was forced to flee for refuge to Lebanon, 1016, after preaching publicly the divine incarnation in Hakim, one of the 7 cardinal beliefs of the sect. Others connect the name 'Druses' with various

Arabic words. Hamzé, a Persian disciple of Hakim, gave the Druse faith its settled form. They mingle teachings of the Pentateuch, the Christian gospels, the Koran, and the Sufi allegories, and believe in one God. They hold that the Deity has on no fewer than 10 occasions been made manifest in human form, the last occasion being in the person of Hakim, the Nero-like Fatimite Caliph of Egypt (966-1021). One tenet of their faith is that the number of souls is definite, and that when one man dies his spirit assumes another fleshly cloak and lives a life conditioned by classes of Akals (Initiated) and Djahils (Uninitiated). Both classes look forward, as a prelude to the end of the world, to an Armageddon between Islam and Christendom, and celebrate their religion in mysteries. A most fanatical and warlike people, they have revolted against all their rulers—the Turks, the Egyptians, and in late years the Fr.; yet they discourage proselytism. Mohammed is not accepted by them as an incarnation of the Deity. In the 17th cent. Emir Fakr-ed-din Maan II, a noted Druse leader and the most famous figure in the hist. of the race, annexed Beirut and Sidon, and menaced Damascus. He intrigued with the Christians, and was executed by the Turks (1635). In the 18th cent. the Turks and D. revolted against Egypt, and the famous Emir Meshir was exiled to Malta, dying at Constantinople, 1851. From 1840 to 1860 there was endless bitter strife between the D. and the Maronite Christians. After the Maronite Massacres of 1860 the Fr. interfered (1861), and in 1864 the European Commissioners drew up a new constitution for Lebanon under a Christian governor chosen by the Porte, Daoud Pasha being the first. He founded an educational estab. at Abey. There was a fierce revolt in 1925 against the Fr., who held the mandate for Syria, and the revolt was crushed with extreme severity by Gen. Sarrail. Their main stronghold is now in Lebanon but there are some in Syria and Israel. See L. Stein, *Syria*, 1925; P. K. Hitti, *The Origins of the Druse People and Religion*, 1928.

Drusus, Marcus Livius: 1. Rom. tribune of the plebs in 122 BC, but a supporter of the aristocracy. After threatening to veto a popular measure proposed by Gaius Gracchus, his democratic colleague, he proposed almost the same measure himself in order to prove to the people that the patricians were their best friends. The success of this policy earned him the consulship in 112, and the title 'patron of the Senate.'

2. Son of the preceding: tribune in 91 BC. He pursued the same course as his father, but was baffled in the execution of his purpose, which was to broaden the constitution and admit the Italians to citizenship. In consequence he formed a conspiracy, but was assassinated. This led to the Social war.

Drusus, Nero Claudius (Germanicus) (38-9 BC), Rom. general, adopted son of Augustus and younger brother of Tiberius. Horace, in one of his odes, has celebrated D.'s campaign against the Rhaeti and

Vindelici, who threatened the Gallic frontiers, but historically D. is remembered for the subjugation of Germany by his victories over the Usipetes, Sugambri, Chatti, and Suebi, and by the fact that he was the first Rom. general to reach the Elbe. Had not an accident caused his death in early manhood, it seems likely that his winning manners, strategical genius, and brilliant success would have enabled him, had he chosen, to seize the imperial throne.

Drusus Caesar (c. 15 BC-AD 23), son of the Emperor Tiberius and Vipsania Agrippina. After being twice consul, and winning victories in Pannonia and Germania, he was given (AD 22) the tribunician authority by his father, a sign that one day he would inherit the empire. But he d. early in life, being slowly poisoned by the ambitious Sejanus, who had also seduced Livia, his wife.

Druzes, see DRUSES.

Dry-cleaning, operation for cleaning textile and similar materials and fabrics, and articles made of them (e.g. garments, curtains, etc.), without the use of water. It depends on the fact that oils and grease are soluble in certain organic liquids, such as petrol, acetylene tetrachloride, carbon tetrachloride, alcohol, and acetone, and that when the greasy substance has been thus removed the residual particles of dirt may be eliminated by brushing, by the use of vacuum extractors, or by other mechanical means. The great advantage of D. is that it does not spoil the shape of the articles cleaned, and very rarely affects their colour in any way. Modern D. plants operate on a large scale, and economy is effected by recovering the solvents after use. In early days the process of D. was attended with serious risks of fire owing to the inflammable nature of the solvents employed, but the advance of chemical research has provided the dry-cleaner with excellent non-inflammable liquids; these are quickly replacing the solvents formerly employed. For home use light petroleum, or 'petroleum ether,' is a good general solvent, but it very readily takes fire, so that it must be employed with caution. See M. Struan, *Home Dry-cleaning and Laundrywork*, 1933.

Dry Farming. In those areas where the rainfall is limited it is necessary to adopt special measures in order to secure the fullest benefit from all natural sources of irrigation. Experience has shown that the twofold problem of trapping all the rain that falls and of securing that it shall not easily trickle away is best met by treating the upper surface and the lower soil in 2 different ways. The surface soil is broken up and treated in a manner that makes it specially permeable by moisture so that as much as possible of any rainfall shall be immediately absorbed; while the lower soil is kept in a clogged and clay-like condition that retains the water thus secured.

Dry-point, see ENGRAVING.

Dry Rot is a condition of timber in buildings which causes it to become soft, crack into roughly cubical pieces, and

then crumble into a dry powder; during this process drops of water exude from the wood. Almost all kinds of timber may be attacked. In Europe it is caused especially by *Merulius lacrymans*, which is called the D. R. fungus. Other fungi may also cause it, especially *Lenzites sacpiaria* in America. *M. lacrymans* at first appears growing on the surface as a white thread-like growth, and at the same time penetrates the wood, destroying its tissues. Later the growth on the wood thickens and parts of it become reddish-brown and pitted and form reproductive structures, the fruit bodies, on which

resistant to D. R.; timber of W. red cedar is not attacked.

Dryads (Gk *drus*, oak), the nymphs of the trees. Each tree (especially oak) had its own particular D., whose life was bound up with it—hence Hamadryad (*hama*, together).

Dryas, family Rosaceae, contains 2 species of evergreen Arctic plants. *D. octopetala*, the mt. avens, grows in Alpine dists. of Europe, on Scottish and Irish mts, and in Yorkshire. The plant is procumbent, with simple leaves, a woody stem, and white flowers; after fertilisation the style grows feathery, and the



DRYBURGH ABBEY

W. F. Mansell

spores are produced; these fall and form a reddish-brown powder below; they germinate under damp, acid conditions, and again form the fungus. Root-like, grey, brittle strands, which may be as thick as a lead pencil, are also formed; these may penetrate the mortar between stones and bricks, and grow for several feet. By this means the fungus may spread throughout the building. D. R. may be prevented by the use in buildings of well-seasoned timber, damp-proof courses in the lower parts of the walls, and by adequate ventilation under floors and behind panelling; leakage in roofs from water pipes should have immediate attention. Treatment consists of the removal of soft and decayed wood and its replacement by wood which has been treated with a fungicide, e.g. creosote, 5 per cent solution in water of magnesium silico-fluoride or sodium fluoride; various phenol compounds have also been used. The fungal strands in walls may be isolated by a covering of concrete on the inner surface. Heart wood of oak and teak is very

fruit is oval and long-tailed. *D. depressa* has been found in Ireland.

Dryburgh (Gaelic *Dàrach-brnach*, bank of oaks) **Abbey**, beautiful monastic ruin in SW. Berwickshire, Scotland, on the R. Tweed, 4 m. from Melrose. It was founded about 1150 for Premonstratensian canons by Hugo de Morville, constable of Scotland. Burned by Edward II (1322), it was partly restored by Robert Bruce. Under Richard II it again suffered (1385), and was reduced to ruins by Bowes and Latoun (1544), and by the Earl of Hertford's expedition (1545). The style is mainly Decorated. St Mary's aisle in the N. transept has the tombs of Sir Walter Scott (1771-1832), J. G. Lockhart his biographer, and Field Marshal Earl Haig. The abbey was presented to the nation in 1918.

Dryden, John (1631-1700), poet, dramatist, critic, b. Aldwinkle, Northamptonshire. He was descended on both sides from families which had at this time strong leanings towards the Puritans and against the monarchy. He was educ.

at Westminster School under the famous Dr Busby, and proceeded from there to Trinity College, Cambridge. In 1649 had appeared his first contribution to poetry in the shape of an elegy on the death of Lord Hastings. In 1654 he took his B.A., and in the same year his father died, leaving him property worth about £60 a year. He seems to have remained at Cambridge during the following 3 years, although this is not quite certain. In 1657, at any rate, he seems to have taken up his residence in London, where, in all probability, he lived under the protection of his cousin, Sir Gilbert Pickering. In 1659 appeared his stanzas commemorative of the death of Cromwell. In 1660 he pub. *Astræa Redux* in honour of the Restoration, and followed this up by a panegyric in honour of King Charles's coronation in the following year. Without attempting any disguise, he proclaimed frankly that he was endeavouring to obtain as much money as he could, and in a preface to 4 of his plays he owed that he would force his genius to perform that which the humour of the public demanded. The taste of the public was not over choice, and yet D., in his attempt to satisfy that public taste, overstepped even the wide limits of decency of the Restoration age. This is not altogether to be wondered at, since he was forcing his genius to perform something for which it was totally unsuited. *The Wild Gallant*, 1663, was a failure, but *The Rival Ladies*, produced in the same year, was more of a success. In that year he also collaborated with Sir Robert Howard in the composition of *The Indian Queen*, and in the following year he married the Lady Elizabeth Howard. In 1665 appeared from D.'s pen alone *The Indian Emperor*, which was a great success. In 1666 appeared his poem *Annus Mirabilis*, which commemorated the Dutch War and the Great Fire.

Between the appearance of this poem and 1681, D. appears to have confined himself entirely to stage plays. He wrote many during this period, and these plays may be divided into two distinct classes: the one following the general tendency of the day and attempting to make up by their ribaldry for their want of genius; the other, dramas founded upon striking incidents in the hist. and mythology of the world. In the former, for reasons already given, he was almost uniformly unsuccessful, in the latter his success was really popular. Amongst the plays which he produced at this time are: *Secret Love*, 1667, *Sir Martin Mar-all*, 1667, *An Evening's Love*, 1668, *Tyrannick Love*, 1669, *The Conquest of Granada by the Spaniards*, 1670, *Marriage à la Mode*, 1671, and *The Assignment: or Love in a Nunnery*, 1672. The extravagant boasting of the preface to *The Conquest of Granada* was the cause of the production of *The Rehearsal*, a play written in burlesque principally by the Duke of Buckingham. In 1668 D. had pub. the greatest of his critical works, the excellent *Essay on Dramatic Poesie*, and in 1670 he had become poet laureate. In 1674 he attempted to turn *Paradise Lost* into rhymed

couplets, having, it is said, the permission of Milton 'to tag his verses.' *Aureng-Zebe* was the last of his rhymed plays, and was pub. in 1676. In 1677 appeared *All for Love*, a version of the story of Antony and Cleopatra, but written from an entirely different point of view from that of Shakespeare. A comparison of the two plays leaves us entirely convinced that Shakespearian drama was the highest form, but it gives us also a very much greater opinion of D. than can be obtained from any of his other plays. Other plays which D. wrote subsequently to this are: *Oedipus*, 1678; *Troilus and Cressida*, 1679; *The Spanish Friar*, 1680; *The Duke of Guise*, 1682; *Albion and Albanius*, 1685; *Amphitryon*, 1690; *King Arthur*, 1691; *Cleomenes, The Spartan Hero*, 1692; and *Love Triumphant*, 1694.

D. now adopted satire as the instrument of his genius, and pub. in 1681 *Alsa'om and Achitophel*. This satire was written from the court point of view, probably with the idea of gaining favour for himself, and was certainly immensely popular. He had not the faculty of delicate satire, but the blows which he struck were hard. His next satire was *The Medal*, 1682, a poem written in savage commemoration of the medal struck when Shaftesbury was acquitted. He attacked and attempted to demolish Shadwell in the poem *Mac Flecknoe, or a Satyr upon the True-Blew-Protestant Poet, T. S.*, 1682. In 1682 appeared *Religio Laici*, which attacked the Papists and still more bitterly urged on the persecution of the Non-conformists. On the accession of James II in 1685, D. became a Catholic. By many his conversion has been held to be the result of sincere conviction, while, on the other hand, the majority hold that it was merely another example of his time-serving characteristics. Be that as it may, he wrote a poem, *The Hind and the Panther*, 1687, in which he strongly advocated the faith of his new religion. The Revolution of 1688 found him still unchanged, and as a result of his Catholicism he lost his office of poet laureate, and had to fall back upon his pen for his living. In 1693 appeared some trans. of Ovid and Homer, and almost immediately afterwards he set to work on a complete trans. of Virgil, which appeared in 1697. This was followed by the famous second 'Ode on St. Cecilia's Day.' His last work, pub. a few months before his death, was the *Fables*, principally founded on the stories of Boccaccio and Chaucer. During the later part of his life he had been dependent on the trans. for his daily bread, and he also seems to have received presents from his friends. As a translator he rendered Virgil, Juvenal, Ovid, and Chaucer, and the best of his prose is the preface to his *Fables* of 1700, in which, in the year he died, he introduced some of his trans. to the public. Although deprived of his position as laureate, he still continued to be recognised as the greatest living poet, and he lived without fear of molestation from the gov. and respected by all. He was buried in Westminster Abbey.

By his conversion he became the literary parent of the greatest poet of the succeeding age, Pope. His genius is undoubted, and showed itself principally in his ability to imitate and to excel those whom he imitated. He had no great originality, yet his position as one of the greatest of our poets remains. He established, yet he excelled all. In the heroic couplet, the deca syllabic quatrain, and in blank verse, he displays equal mastery. But it was in the heroic couplet that he wrought his most striking effects. His couplet lacks the chiselled precision of form and epigrammatic brilliance achieved by his successor in verse satire—Pope—but has a richer and more vital content; and as a master of prosody D. ranks with the greatest of all Eng. poets. Like Johnson, D. was the literary dictator of his age, presiding at Will's Coffee House in unquestioned supremacy among the contemporary wits. Among the collected eds. are: complete works ed. by Sir W. Scott, 1808, 1821, revised by G. Saintsbury, 1882-92; poems, ed. by W. D. Christie, 1870, and B. Dobree, 1934; plays, ed. by W. Congreve, 1717, and M. Summers, 1931-2; prose, ed. by E. Malone, 1800, and W. H. Hudson, 1912. Bibliography by H. Macdonald, 1939. See G. Saintsbury, *Dryden*, 1881; R. Garnett, *The Age of Dryden*, 1895; M. Van Doren, *The Poetry of John Dryden*, 1920, 1931; Sir W. Raleigh, 'John Dryden and Political Satire', in *Some Authors*, 1923; T. S. Eliot, *Homage to John Dryden*, 1924; C. Hollis, *Dryden*, 1933; N. B. Allen, *The Sources of John Dryden's Comedies*, 1935; D. N. Smith, *John Dryden*, 1950.

Drying Machines, devices for drying textile materials. Those for drying printed calicoes or long webs of similar fabrics usually consist of a series of revolving metal cylinders heated from within by steam. The machine commonly used in bleaching or laundry works is formed of two drums or cylinders open at the top. The articles to be dried are placed in the inner one, which is made to revolve at high speed. The moisture is forced out by this centrifugal action through the perforated sides of the inner into the outer drum, whence it is drained off by means of a pipe. Open-air or hot-chamber drying usually completes the process. The ordinary 'wringer' or 'mangle' has 2 rollers mounted parallel one above the other, with an adjustment by means of which the distance between them can be varied. The Blackman air-propeller is used for drying wool by drawing heated air through it. Slightly different apparatus is used in paper manu.

Dryopes, Pelasgic tribe who first settled round Mt. Oeta, in Thessaly, Greece, in the dist. called after them 'Dryopis', extending N. to the R. Spercheius.

Dryophis (Gk *drus*, an oak; *ophis*, snake), generic name of the whip-snakes, non-venomous reptiles, native to W. Africa and India.

Dual Monarchy, name given to the Austro-Hungarian Empire, formed by the union of Austria and Hungary, 1867.

The 2 countries became separate states after the First World War. Their joint ruler was king of Hungary and emperor of Austria.

Dual Number, grammatical term denoting a form of a noun, pronoun, or verb employed with regard to 2 things. Thus in Greek the dual form of *gigas*, giant, is *gigante* and the plural *gigantes*. The D. N. existed in Sanskrit, Arabic, and Hebrew, but in Latin we only find it in 2 words, *duo*, two, and *ambo*, both. The D. N. is rare in the Teutonic languages. In O. E. the dual forms exist in the declension of *ic*, I, and *ou*, thou, only. They are, of the former, nom. *wit*, acc. *uncit*, *unc*, gen. *uncer*, dat. *unc*; of the latter, nom. *git*, acc. *incit*, *inc*, gen. *incer*, dat. *inc*. In Gothic, they are found in the declension of *ik*, I, and *pu*, thou, and in the verbs. For example, the second person imperative of *sôkjan*, to seek, has 3 numbers: sing. *sôkei*, dual *sôkiats*, plur. *sôkeip*.

Dualism (Lat. *duo*, two), philosophical term applied to any system of thought which rests on 2 co-existent and independent principles. It is the opposite of Monism. The earliest dualist was Plato, who held that good truly exists, but in combination with evil, which is non-existent. Aristotle believed form and matter to lie at the bottom of all things. Descartes, arguing from his proposition 'Cogito, ergo sum,' maintained the absolute I. of consciousness or thinking (*res cogitans*), and extension (*res extensa*). In theology, D. assumes the separate existence of 2 underlying principles, good and evil, as in the doctrine of Zoroaster which postulates 2 contending deities, Ormuzd and Ahriman. In Christian theology arises the difficulty (but not impossibility) of reconciling the omnipotence and perfect goodness of God with the existence of evil and pain. See A. Schweitzer, *Christianism and Ethics*, 1923.

Du Barry, Marie Jeanne Bécu, Comtesse (1746-93), mistress of Louis XV: b. Vancoeurs, Mense. She entered a milliner's shop in Paris at 16, and became the mistress of the dissolute Jean, Comte du Barry, through whom she met Louis XV. Her beauty and wit attracted the attention of the king, who before long made her his official mistress at court, after a merely formal marriage with Jean's brother Guillaume. She had complete influence over the king for the rest of his reign and was in virtual control of gov. policy. After Louis' death in 1774 she was obliged to live in retirement at Luciennes, and on the outbreak of the revolution she came to England to raise money, 1792, but was arrested and guillotined on her return, 1793. See her memoirs (ed. and abbreviated), 1930. See also lives by K. von Schulmacher, 1932, and E. Breitner, 1938.

Du Bartas, Guillaume de Saluste (1544-1590), Fr. poet, b. Montfort. Armagnac; followed the profession of arms; served Henry IV, and died from wounds received at the battle of Ivry. His religious poem, *La Semaine, ou Création du monde*, 1578, which was probably imitated from

Tasso's *Sette Giornate*, went through 30 eds. in 6 years, and was trans. into 6 languages. He was greatly admired by Spenser. Indirectly he served to enrich the Eng. language by compounding words which were imitated by Sylvester (his translator), Chapman, and Sir Philip Sidney.

Dubbo, tn in Lincoln co., New S. Wales, Australia, situated on the Macquarie R. It is a railway junction and the centre of a flourishing wheat-growing and pastoral dist. Pop. 12,370.

Du Bellay, see BELLAY, JOACHIM DU.

Dubica, fort. tn of Croatia, Yugoslavia, on the Una. It was the scene of battles between the Austrians and Turks in 1788. Pop. 3200.

Dublin: 1. Cap. of the Rep. of Ireland, stands at the mouth of the R. Liffey, on the Irish Sea. It lies in lat. 53° 20' 38" N., and in long. 6° 17' 30" W., and is 138 m. W. of Liverpool. An ancient city—it has been identified by some as the *Eblana* mentioned by Ptolemy—it is the natural outlet from, and entrance to, the great Central Plain of Ireland, and was destined to be a cap. The name derives from the Gaelic *Dubh Linn*, or 'dark pool,' but a still older name, *Balte Atha Cliath*, 'the town of the ford of the hurdles,' is the form currently used in modern Irish.

D. extends along D. Bay from Howth (q.v.) on the N. to Dun Laoghaire (q.v.) on the S., a distance of approximately 14 m., but the centre of the city is siraple in plan. O'Connell Street, formerly Sackville Street, its widest and most imposing artery, is divided in two by the Nelson Pillar, D.'s prin. landmark, and runs from N. to S., crossing the Liffey, flowing due E., at O'Connell Bridge, and joining then with Westmoreland Street, which leads to College Green, the hub of the traffic. College Green is dominated on one side by Trinity College (D. Univ.) and on the other by the Bank of Ireland, formerly the old Parliament House. To the right, Dame Street leads to D. Castle, the City Hall, and Christchurch. Ahead is Grafton Street, leading to St Stephen's Green, whilst a left turn at the entrance to Grafton Street leads eventually to Merrion Square and the gov. buildings. Between Grafton Street and Merrion Square E., and parallel to both, are Dawson Street, in which is the Mansion House, the official residence of the Lord Mayor, and Kildare Street, in which are Leinster House, seat of Dáil Éireann (q.v.), the national parliament, the National Library, and the National Museum.

St Patrick is said to have visited D. in 448 and to have converted many of its pagan inhab., but the Danes (Ostmen or Norsemen) are regarded as the real founders of the city. The Danes began their marauding raids towards the end of the 8th cent., and D., which was captured by Olaf the White in 852, was one of their first permanent settlements in Ireland. The Dan. influence rose and fell for the next 150 years, but it was finally broken when King Brian Boru defeated the Norsemen (who had gathered from the Orkneys and elsewhere for a

trial of strength) at the battle of Clontarf, outside D., in 1014. Nevertheless, D. remained very largely a Dan. city, and when the Normans (who came to Ireland as the allies of the infamous and justly-banished Dermot McMurrough, king of Leinster) captured it in 1170, it had an Irish archbishop, St Laurence O'Toole, but a Dan. governor, Asculf. The infant city was then on the S. side of the Liffey, and some of the dispossessed Danes founded a small settlement (Oxmantown) on the N. bank of the riv. D. had begun to grow. King Henry II came to D. in 1171 to curb his own barons and receive the homage of some of the Irish chiefs. He wintered in an *ad hoc* palace built, the old chronicles say, 'of peeled osiers,' entertained lavishly, gave D. its 1st charter, granted the city as a colony to the people of Bristol, and appointed Hugh de Lacy to govern it in his name. The Normans built Christchurch Cathedral on the Dan. foundation, and in 1190 John Comyn, the 1st Norman archbishop, began a 2nd cathedral, St Patrick's, just outside the city walls. The pop. of D. was then less than 10,000 (it was 64,000 in 1688, 168,000 in 1798, and reached half a million early in the 20th cent.).

D. Castle—the term was later to become a synonym for Brit. rule—was completed in 1220. At this time, and for centuries after, D. was the chief fortress of 'the Pale,' a narrow coastal strip (its boundaries varied with the fortunes of war, but it stretched roughly from Dundalk to the Wicklow Mts, and for 20 m. inland) in which the Eng. writ ran. Neighbouring chiefs carried off its cattle at intervals, or exacted 'Black Rent' for leaving them in peace. It was to chastise one of these chiefs that Richard II landed at Waterford with an army of 34,000 men, but the Irish guerillas harried the Eng. all through Wicklow, and after a breathing space in D., Richard sailed home again (1394).

The Reformation reached Ireland in 1535, when a Protestant, Dr Brown, became archbishop of D., and the D. Parliament passed the Act of Supremacy in 1536. The new doctrines made little headway in the rest of the country, but were pressed with some rigour in the city. In 1591 Trinity College (D. Univ.) was founded on the site of the confiscated monastery of All Hallows. James II, from whom the Irish Catholics expected toleration and restitution, was welcomed in D. in 1689, but he left the country hurriedly after his defeat at the Boyne, leaving the Irish and the Fr. to fight his battles. Soon afterwards the victorious William of Orange visited D., and presented a chain of office to the lord mayor.

D. grew considerably during the Restoration, but the 18th cent. was the time of its greatest development and elegance. Many wide squares and the streets were built then, and the aristocracy patronised art and letters. The Royal Dublin Society was founded in 1750 to encourage trade and culture, and its achievements justified in time the verdict of Lord Chesterfield: 'It did more good

to Ireland with regard to Art and Industry than all the laws that could have been framed.' The Irish Parliament, hitherto subservient to the Brit. House, became fully independent in 1783 (mainly because of pressure by the Volunteers, an armed force raised originally to protect Ireland from possible Fr. invasion during the revolt of England's Amer. colonists). Trade flourished, and D. prospered and grew. But D. wilted proportionately after the passing of the Act of Union and the death of its parliament. The wide streets and squares remained, but the great Georgian houses began to decay, and some of them are tenements now.

Amongst D.'s famous buildings is the Old Parliament House, begun in 1729 to the design of Sir Edward Lovat Pearce, surveyor-gen. of Ireland, and regarded as one of the finest specimens of 18th-cent. architecture. The E. portico, erected in 1785, was designed by Gandon, who also designed the Custom House (1791), on the N. quays, perhaps D.'s finest building. The Custom House was burned in 1921, during the War of Independence, but was splendidly restored, and the new building retains the grace and beauty of the old. The Parliament House was acquired by the Bank of Ireland in 1804, and although structural alterations have been made since then, many of the old features and chambers have been retained.

The Roman Catholic Pro-Cathedral in Marlboro' Street, adjacent to O'Connell Street and the Nelson Pillar, is built in Grecian-Rom. style, and was completed in 1825, some years before the granting of Catholic Emancipation, the chief protagonist of which, Daniel O'Connell, 'the Liberator,' became D.'s 1st Rom. Catholic mayor in 1841. The 2 older cathedrals are Church of Ireland.

Leinster House, Kildare Street, now the meeting place of the Dáil (q.v.) and Senate, was built by the 1st duke of Leinster in 1745, and rented by the Royal Dublin Society in 1815. With the national museum and national library it forms 3 sides of an open square fronting on Kildare Street.

Other notable D. buildings are the Four Courts, begun in 1786 by Thomas Cooley but finished by Gandon, and the General Post Office (designed by Francis Johnston), a granite building with an Ionic portico of Portland stone. The Four Courts was almost completely destroyed during the Civil war (1922) that followed the signing of the Anglo-Irish Treaty, but has since been reconstructed. The General Post Office was the H.Q. of the Irish Volunteers during the Easter Rising of 1916, when it was shelled by a gunboat on the Liffey and destroyed by fire. It, too, has since been rebuilt, and its impressive main hall contains a memorial to the men of 1916 in the shape of a statue of Cuchulainn (one of Ireland's legendary heroes), on the base of which is inscribed an excerpt from the Declaration of the Republic read by Padraic Pearse from the steps of the General Post Office. St Michan's Church, Church Street, a 17th-cent. building near the Four Courts,

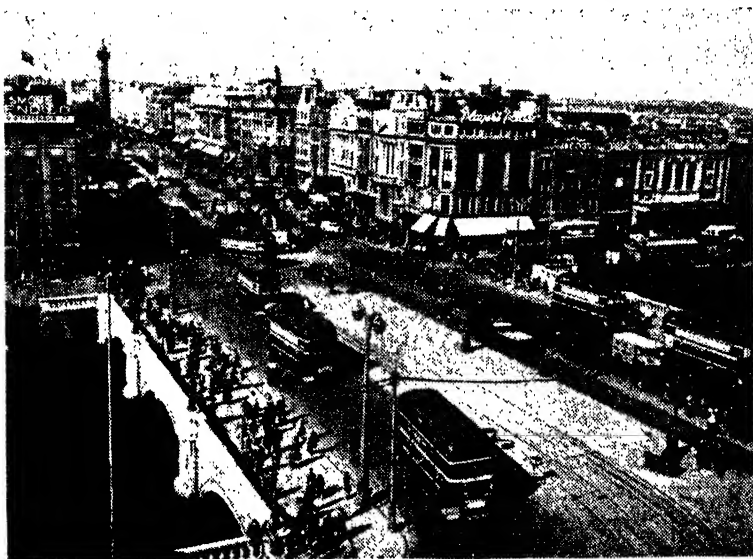
is noted for its vaults, in the dry atmosphere of which certain bodies have been preserved for centuries. One of the bodies is said to be that of a Crusader, and visitors who can stand the touch of age-old leathery skin are sometimes allowed to 'shake hands with the Crusader.' Amongst notable 20th-cent. D. buildings are the Dept of Industry and Commerce building in Kildare Street, built in 1942, and—almost in the shadow of the Custom House—the 'Busarus,' or Central Bus Station (1953), in the upper storeys of which, behind an enormous glass frontage, are the offices of the Dept of Social Welfare.

In literature and the arts, D. has much to boast of. Garrick and Mrs Siddons played in its Crow Street and Smock Alley theatres. Handel conducted the 1st performance of *Messiah* in Fishamble Street in 1742, and Goldsmith, Farquhar, and Congreve were students at Trinity College; Richard Brinsley Sheridan was b. in Dorset Street, Oscar Wilde in Merrion Square, Thomas Moore in Angier Street, and G. B. Shaw in Sygne Street. Other famous Dubliners include James Clarence Mangan, W. B. Yeats, Charles Lever, Sheridan le Fann, Dean Swift, Sean O'Casey, and James Joyce. The Abbey Theatre (q.v.), opened in 1904, has a world reputation and is linked with the names of Lady Gregory, Yeats, the brothers Fay, T. C. Murray, Sean O'Casey, Barry Fitzgerald, and F. J. McCormick. The Gate Theatre (1928) is perhaps not so well known outside Ireland, but it has produced many fine plays and fine players. Its big names are Michael MacLiammóir and Hilton Edwards, and it knew the young Orson Welles. The Feis Ceoil, an ann. D. musical festival, has a high reputation, and amongst those who won their earliest laurels at its competitions were John McCormack and Margaret Burke-Sheridan.

The National Gallery, Merrion Square, adjacent to Gov. Buildings and Leinster House, has pictures by Fra Angelico, Michelangelo, Titian, Rubens, Van Dyck, etc., as well as works by such modern Irish painters as Jack B. Yeats, Lavery, and Orpen. The Municipal Gallery of Modern Art, which occupies what was once the tn house of Lord Charlemont in Parnell Square, was opened in 1907 and reconstructed in 1933. It owes much to the generosity of Sir Hugh Lane, who was lost on the *Lusitania* (1915), and who, in an unwitnessed codicil to his will, left to the D. Municipal Gallery his collection of 39 continental paintings then on loan to London's National Gallery. Much controversy has raged over these pictures, which still remain in London, and a room in the D. Municipal Gallery awaits their return. The National Library, in Kildare Street, was founded in 1877 with a collection donated by the Royal Dublin Society, and now has some half-a-million vols. Facing it is the National Museum, which has a splendid collection of antiquities, including the Tara Brooch, the Ardagh Chalice, and the Cross of Cong (q.v.). Trinity College Library (1601) has more

than 500,000 books, and receives a copy of every book pub. in Britain. Amongst its anct MSS. is the incomparable *Book of Kells*, a superb example of the beautifully ornamented script of the early Irish monks. The Royal Irish Academy, Dawson Street, has the finest collection of old Irish MSS. in the country, whilst Marsh's Library, near St Patrick's Cathedral, which was founded by Archbishop Marsh in 1707, is the oldest public library in Ireland.

whisky. Since the estab. of the Irish Free State (1922) sev. large tobacco factories have been built, and many smaller industries, including textiles and electrical goods, begun. Despite the multiplication of factories (gov. policy is to encourage industry), D. remains an administrative and distributing centre. It is very obviously the cap. of an agric. country, and its most important artery is that which leads from the cattle market near the Phoenix Park to the cross-



Irish Tourist Association Inc.

DUBLIN: O'CONNELL STREET AND THE RIVER LIFFEY

D. has 2 univs.: D. Univ. or Trinity College (q.v.); and the National Univ. of Ireland (q.v.) founded in 1909, and linked with the name of Cardinal Newman. 1st rector of the Catholic Univ., from which it evolved. The D. college of the National Univ. of Ireland, known as Univ. College, D., is situated in Earlsfort Terrace, adjacent to St Stephen's Green, on the W. side of which is the College of Surgeons, which grants degrees in medicine and dentistry. There are many secondary schools in and about the city, including Blackrock College, Belvedere College, Castleknock College, Loreto College, D. High School, Alexandra College, etc. Most are Rom. Catholic, and run by religious communities.

Though not an industrial city, D. has one of the biggest breweries in the world (Guinness's), and its Chamber of Commerce estab. in 1783. Other important industries include the making of biscuits, poplin (this industry was estab. by refugee Huguenots), woollens, and

channel boats. There are now over 4½ m. of quays, and the port is controlled by the Port and Docks Board (1868). D. is also the H.Q. of the civil service, banks, army, and police. Civil service depts are housed in Gov. Buildings, Merrion Square (formerly the Royal College of Science), Kildare Street, St Stephen's Green, the General Post Office, the Custom House, and elsewhere. D. is the transport centre of the Rep., being linked by rail with Cork, Galway, Sligo, and Wexford, these services being run by Corus Iompair Éireann (q.v.) or C.I.E., which also has services to all parts of the country. The Great Northern Railway connects D. with Belfast and Londonderry. The Royal Canal and the Grand Canal (now controlled by C.I.E.) join with the Shannon and the Barrow. Prin. steamship routes are D. to Liverpool (Brit. and Irish Steam-packet Co.), Dun Laoghaire to Holyhead (Brit. Railways), and D. to Glasgow. There are sailings also to London, Douglas, and elsewhere. Aer Lingus,

which operates a fleet of Viscounts and Rolls-Royce-powered Friendships, has regular air services to London, Glasgow, etc., and also to Holland, France, Spain, Belgium, Germany, Switzerland, and Italy. One internal service is operated between D. and Shannon Airport (q.v.) near Limerick, to connect with transatlantic planes. The D. airport at Collinstown (5 m.) is tasteful in design and well equipped. During 1956 459,000 passengers passed through the airport, now among the busiest in Europe.

D. has a backdrop of hills (the D. Mts), a long coastline, and many seaside suburbs or near neighbours, including Sutton, Howth, Portmarnock (championship golf course), and Malahide on the N., and Blackrock, Dun Laoghaire, Dalkey, and Killiney on the S. The Phoenix Park (q.v.), formerly W. of the city, and now almost enclosed by it, has an area of 1760 ac. and a circumference of 7 m. In it are the official residence of the president (Aras an Uachtaráin), the Papal Nunciature, and the Amer. Legation. A racecourse adjoins the park. In the N. suburb of Glasnevin (noted also for its cemetery, in which Parnell, O'Connell, Arthur Griffith, Michael Collins, and many other national figures are buried) are the Albert Agric. College and the Botanical Gardens (50 ac.). Rathfarnham, 4 m. S. of the city centre, is the gateway to the D. Mts. There are excellent roads across the mts, breathtaking views, and great stretches of bog and heather. At their foot is Glenasmole, 'the Glen of the Thrushes,' a beauty spot famous in legend and site of the Bohernabreena reservoirs.

Three shows are held annually in the grounds of the Royal Dublin Society at Ballsbridge, the best known being the horse show, held in Aug., which features bloodstock sales and international jumping competitions, and is the outstanding event of D.'s social year. There are race meetings at Baldoy (5 m. from the city centre), Leopardstown, and the Phoenix Park, and international football matches are played at Lansdowne Road (Rugby) and Dalymount (Association Football). The Gaelic Athletic Association has its headquarters at Croke Park, where the national games of hurling and Gaelic football are played. The All-Ireland County Finals, played on Sundays, attract crowds of 80-90 thousand. During 'An Tóstal' (q.v.), a national festival held in May, Ireland is officially 'at home' to visitors, and D. has many special cultural and athletic attractions. Tourist promotion is the business of 'An Bord Fáilte Éireann' (*fáilte* means welcome), which absorbed 'Fogra Fáilte,' a kindred body, in 1955, and which has activities ranging from the pub. of brochures and the grading of hotels to erecting plaques on ruins of historic interest. Like the electricity board and C.I.E., which also have their H.Q. in D., 'An Bord Fáilte Éireann' is gov. controlled.

Over the years, D. has spread outwards and incorporated some of its smaller

neighbours. The townships of Glasnevin, Clontarf, and Drumcondra became part of the city in 1900, the urb. dists. of Rathmines and Pembroke in 1930, and the township of Howth in 1942. In 1930 the powers and functions of the D. Municipal Council were vested in D. Corporation, consisting of 35 elected members and a city manager. Later the number of members was increased to 45, 9 of whom are aldermen and the rest councillors. The centre of civic administration is the City Hall, which is situated facing Parliament Street and on the short hill leading from D. Castle to St Patrick's Cathedral. The City Hall (1779) was formerly the Royal Exchange, and was acquired by the Corporation in 1851. D. has 102 royal charters, the first granted in 1172 and the last in 1727. Pop. 522,000. See J. T. Gilbert, *A History of Dublin*, 1854-9; D. A. Chart, *The Story of Dublin*, 1932; Christine Longford, *A Biography of Dublin*, 1936; Constantia Maxwell, *Dublin under the Georges*, 1936; *Dublin Civic Week Handbook*, 1937; Stephen Gwynn, *Dublin Old and New*, 1938; Eric Whelpston, *The Book of Dublin*, 1948; John Harvey, *Dublin, a Study in Environment*, 1949; Richard Hayward, *Leinster and the City of Dublin*, 1949; Ireland, *An Illustrated Guide* (An Bord Fáilte Éireann).

2. City, co. seat of Laurens co., Georgia, U.S.A., with cottonseed oil mills, wood-working industries, etc. Pop. 10,230.

Dublin Fusiliers. The Royal, formerly the 102nd and 103rd Foot. Both regiments had their origin in independent companies of Foot raised in India by the E. India Co. during the 17th cent.; they were regimented about the middle of the 18th cent. The 102nd were previously the R. Madras F. and the 103rd the R. Bombay F. They were given their numbers on being transferred to the Crown after the Indian mutiny. In 1881 they were linked to form, respectively, the 1st and 2nd Battalions the R. D. F., which were disbanded in 1922. A distinguished member of the Madras regiment was Ensign Clive (later Lord Clive), the victor of Plassey. Both regiments took a leading part in all the Indian campaigns, and gained great distinction during the Indian mutiny, 'Neil's Bluecaps' and the 'Old Toughs,' as they were called, always being to the fore. In the S. African War they were especially conspicuous at Wagon Hill, near Ladysmith; indeed it was largely in commemoration of the bravery of the D. F. and other Irish regiments in the S. African War that the Irish Guards were raised. During the First World War the regiment raised 11 battalions, which served in France, Flanders, Gallipoli, Egypt, and Palestine.

Dubois, Eugène (1858-1941), Dutch surgeon, discoverer of the skull of *Pithecanthropus erectus* (q.v.) in Java, 1891.

Dubois, Guillaume (1656-1723), Fr. cardinal and statesman, b. Brive, Limousin. In 1687 he was appointed tutor to the young duke of Chartres (afterwards regent duke of Orleans), and managed to win royal favour by arranging a marriage

in 1692 between his pupil and Mademoiselle de Blois, the legitimised daughter of Louis XIV. He became an ambas. in London, and on his return (1701) secretary to his former pupil, and councillor of state (1715). By this time he had acquired tremendous influence over the regent, and practically held the reins of power in his own hands. D. reversed Louis XIV's policy of friendship with Spain. He negotiated the Triple and Quadruple Alliances (1717, 1718) and forced Philip V of Spain to dismiss Alberoni. D. secured for himself the archbishopric of Cambri (1719) and was made a cardinal in 1721. See life by L. Wiosener, 1891, and E. Bourgeois, *Le Secret au Régent et la politique de Dubois*, 1909.

Dubois, Paul (1829-1905), Fr. sculptor, first studied law, then entered Toussaint's studio in 1856. 'Saint Jean Enfant,' 1860, 'Saint Jean-Baptiste' (bronze), 1863, and 'Narcisse au Bain,' 1867, were among his earlier works. 'Le Chanteur florentin,' exhibited 1865, 'Le Connétable de Montmorency,' 1886, and the equestrian statue 'Jeanne d'Arc,' 1895, are some of his finest productions. The beautiful 'Tombeau du Général Lamoricière' in Nantes Cathedral is one of his best-known works. After 1873 D. became known as a portrait-painter, 'Mes Enfants' being exhibited in 1876. He painted in Henner's manner, and produced busts of Heimer, Dr. Parrot, Baudry, and others.

Dubois, Théodore (1837-1924), Fr. composer, studied at the Paris Conservatoire, winning the Grand Prix de Rome in 1861. He was choir-master of the church of St Clotilde 1863-68, then at the Madeleine, of which he became organist in 1877. He became prof. of harmony at the Conservatoire, 1871; prof. of composition, 1891; and director, in succession to Ambroise Thomas, 1896. He wrote extensively for the church, the stage and the concert-room.

Dubois, city of Clearfield co., Pennsylvania, U.S.A. It is an important manuf. tn, with iron works, machine shops, and coal mines. Pop. 11,500.

Du Bois-Reymond, Emil (1818-96), Ger. physiologist and scientific historian, studied at Berlin and Bonn. He was prof. at the London Royal Institute for 3 years, with Faraday as his patron, and succeeded Müller in the chair of physiology at Berlin, 1858. His researches in animal electricity and the functions of the nerves are especially famous, and he may be said to have created experimental physiology. Among his works are: *Untersuchungen über tierische Elektrizität*, 1848-84, *Über tierische Bewegung*, 1851, *Über die Grenzen des Naturerkennens*, 1872, and *Vorlesungen über die Physik des organischen Stoffwechsels*, 1900. See T. W. Englemann, *Gedächtnisrede*, 1898.

Dubréka, or Doubreka, station of Fr. Guinea, W. Africa, under direct Fr. gov. since 1882. It has much trade with the interior, and good coffee plantations.

Dubicrius, St. see Dyrwig.

Dubrovnik (It. *Ragusa*), tn in Croatia, Yugoslavia, on the Adriatic, at the foot of

Mt Srdj. It is said to have been founded in the 7th cent. In the Middle Ages it became an independent rep., and a great commercial city rivaling Venice. Later it was the centre of Serbo-Croat culture (see YUGOSLAVIA, *Serbo-Croatian Literature*). Incorporated by Napoleon into his new prov. of Illyria (q.v.), it passed to Austria after the Congress of Vienna (q.v.) in 1814, and to Yugoslavia after the First World War. D. is a very picturesque tn; its anc. ramparts remain, and it is overlooked by sev. fortresses. There is a 17th cent. cathedral, and there are many anc. churches, 2 palaces, a 16th cent. custom-house, and a 15th cent. clock-tower. 5 m. SE. of the tn is the seaside vil. of Cavtat on the site of the Rom. city of Epidaurus. D. is the most popular resort on the Dalmatian coast, and has manufs. of textiles, leather-goods, and liqueurs. Pop. 19,100. See Angus.

Dubuque, city, cap. of D. co., Iowa, U.S.A., port on Mississippi R. opposite Illinois-Wisconsin state line and 170 m. WNW. of Chicago. It is a rail and highway centre, and has had a city manager since 1920. The oldest settlement in Iowa (1833), and formerly a lead and zinc mining centre, D. has limestone quarries, railway shops, shipyards, and meat-packing plants, and manufs. tractors, machinery, and radio parts. It is the seat of Loras College, Clarke College, the Univ. of D., and Wartburg Theological Seminary. Also of interest are D. Art Association and St Raphael's Cathedral. Pop. 49,700.

Du Cange, Charles Dufresne, Sieur (1610-88), Fr. scholar and historian, b. Amiens, educ. at the Jesuit College there, later studying law at Orleans. His most famous work is his Lat. glossary, 1678, which was followed by a Gk glossary, 1688. He also ed. the works of sev. Byzantine historians. Other works include *Histoire de l'empire de Constantinople sous les empereurs français*, 1657, and *Historia Byzantina*, 1680.

Ducat, gold coin, which came into currency about AD 1100, and seems to have been named from a word in the inscription which the Apulian coins of 1140 bore: 'Sic tibi, Christe, datus quem tu regis, iste ducatus' (Christ, thou rulest this duchy: to thee be it dedicated!). The D. which Venice struck in 1280-4 later became known as the zecchino or sequin. Introduced in the 14th cent. to Hungary and Bohemia, and adopted in 1559 by the Imperial diet of Germany into the monetary system of the empire, its currency later extended all over W. Europe. The value was about 9s. 4d., but D.s varied in weight and amount of alloy. It. silver D.s were worth 3s. 4d.

Duccio di Buoninsegna (active 1278, d. 1319) It. painter, was the first of the Sienese painters to abandon the Byzantine style of painting, and may justly be regarded as the founder of the Sienese school. It was he who began the decoration of the pavement of the Sienese cathedral with figures in marble inlay in 'chiaroscuro' (q.v.), and the famous altarpiece he executed for this cathedral

between 1308 and 1311 is the only unquestioned work of his still remaining. Painted on both sides, this huge picture (14 ft by 7 ft) represents on the one face the Virgin and Child, and on the other 27 episodes from the life of Christ. The fine "Transfiguration" in the National Gallery may be part of the predella. D. worked also for churches in Florence, Pisa, Lucca, and Pistoia, painting often on gold ground. The "Rucellai Madonna," in Santa Maria Novella, Florence, is probably his. He ranks as one of the most important forerunners of the great Italians.

Du Chaillu, Paul Belloni (1835-1903), Africa explorer and author, b. at St Petersburg; of Fr. Huguenot parentage, educ. in Paris. He early went to the Gabon country, Africa, where his father was a trader. After spending some years in America, he undertook a botanic and zoologic expedition to the Ogowé basin (1855-9). His descriptions of the Abongo pygmies and gorillas (of which he was the first to secure specimens) of the interior in *Explorations and Adventures in Equatorial Africa*, 1861, were discredited by many as mere exaggerations. Later investigations, however, proved the truth of his natural hist. discoveries. In 1863-5 he visited Ashango Land, and the Ngunye Falls, the resulting work being *A Journey to Ashango Land*, 1867. D. C. explored N. Europe (1872-3), and travelled in Russia (1898-1902). Other works are *Lost in the Jungle*, 1869, *The Country of the Dinosaurs*, 1870, *The Land of the Midnight Sun*, 1881, *The Viking Age*, 1889, and *Tvor the Viking*, 1893, are attempts at proving the Scandinavian origin of the Brit.; his last work was *The World of the Great Forest*, 1900.

Duchango, Gaspard (1662-1756), Fr. etcher and engraver, b. Paris. He was a pupil of Jean Audran, and became one of the most noted engravers of his period. The "Io," "Danaë," and "Leda of Correggio" are 3 of his most celebrated works.

Duchenne, Guillaume Benjamin Amand (1806-75), Fr. neurologist, b. Boulogne. He studied medicine in Paris and, after qualifying in 1831, returned to practise in Boulogne. He lived in Paris from 1844 until his death; he never sought a hospital or teaching appointment, preferring to visit various hospitals from day to day, thus acquiring a considerable experience, especially of nervous diseases. He became interested in electrophysiology and in his *Électrisation Localisée*, 1855, classified the electrophysiology of the muscular system. A further monumental work on this subject was *Physiologie des Mouvements*, 1867. He was the first to employ faradic currents in the treatment of nervous diseases and was the creator of electrodiagnosis and electrotherapy. He described several types of paralysis and muscular atrophy, to some of which his name has been attached. His *Mécanisme de la Physiologie Humaine*, 1862, an electrophysiological analysis of facial expression, is one of the greatest contributions to the study of physiognomy. An Eng. trans. of selections from his works, 1883, includes a life.

Duchesne, Père, see HÉBERT, JACQUES RENE.

Duchov (Ger. *Dux*), Czechoslovak tn in the region of Ústí nad Labem (q.v.). It is at the foot of the Erzgebirge (q.v.), and manufs. glass and porcelain. There are lignite mines near. Pop. 8300.

Duchy of Lancaster, see LANCASTER, HOUSE AND DUCHY OF.

Ducis, Jean François (1733-1816), Fr. dramatic poet. He is chiefly noted for his adaptations of Shakespeare, which, however, were based on already existing translations, and altered to suit the taste of the time. He succeeded Voltaire in the Fr. Academy in 1779. His collected works appeared in 1827. See J. J. Jusserand, *Shakespeare en France*, 1898.

Duck, name given to birds of the family Anatidae, which contains also both swans



DUCKS

From top downwards: Mallard, Japanese penguin duck, Australian musk duck, Chinese mandarin duck.

and geese; it should properly be applied to the female, the male bird being a drake, but it is frequently used to include both sexes. The species are aquatic and have short webbed feet and scaly legs; the bill is broad, depressed and rounded at the tip. There is a great variety exhibited in the coloration of the 50 odd species, and many are very handsome birds. They inhabit N. regions of the world, and as they frequent lakes and seas their food consists of such creatures as fish, frogs, and worms. *A. platyrhynchos*, the wild D. or mallard, is the species from which all domesticated D.s have taken their origin.

For domestic use see POULTRY; and articles on different species.

Duck-billed Platypus, Duck Mole, Ornithorhynchus paradoxus, Australian mammal which, with the 2 spiny ant-eaters, forms the primitive group, Monotremata (q.v.). Except for the fact that the young are produced from eggs, and for the flat beak-like mouth, D. P. bears no resemblance to a bird. It lives in long burrows on the banks of rivers. The eggs are laid 2 at a time in a small chamber at the end

of the burrows. These eggs have a non-calcareous shell, but like those of birds and other egg-laying vertebrates have a yolk. The young hatch very soon (about 8-10 days) after the eggs are laid, and are at first naked and blind. At the age of 5 months the young are weaned. In an early stage, the short fleshy bills are provided with teeth; these are lost as the animal matures, and hard horny patches developing in each jaw take their place. The oval, flattened body becomes clothed with fur, which is well adapted to an aquatic existence, and the feet are webbed. The fore-limbs are provided with 5 powerful claws with which the animal burrows. The broad, flat tail is short, and the total length of the body is about 20 in. A horny spur on the hind foot, which is able to inflict a poisonous wound, occurs only in the male.

Ducking-stool, strongly made wooden arm-chair, fixed to the end of a long wooden beam, in which offenders, such as scolding wives, shrews, and sometimes quarrelsome married couples, were seated, fastened in by iron bands, and immersed in water, the beam being placed at the edge of the pond or riv. and working on the see-saw principle. In many dists. dishonest bakers and brewers were punished by this ducking system. The earliest record of it is at the beginning of the 17th cent., and it was in use in England as late as the 19th cent., the last recorded cases being a Mrs Gamble at Plymouth in 1808, Jenny Pipes, 1809, and Sarah Lecke, 1817, of Leominster, though the last's sentence could not be carried out as there was no water in the pond at the time.

Duckweed, **Duck's Meat**, family Lemnaceae, a genus of small floating aquatic weeds, found on stagnant water, of which *L. gibba*, Gibbous D., *L. polyrrhiza*, Great D., *L. trisulca*, Ivy D., and *L. minor*, common D., are found in Britain.

Duckworth, Sir John Thomas (1748-1817), adm., served in N. America, and the W. Indies. In 1794 he won distinction in Howe's great victory over the Fr. off Ushant. In 1800 he became rear-adm.; commander-in-chief at Jamaica, 1802. D. defeated the Fr. off St Domingo, 1806. He was sent to dictate terms to the Porte, 1807, and falling in his mission retreated from the Turks, forcing the passage of the Dardanelles. From 1810 to 1813 he was governor of Newfoundland; he was knighted in 1813.

Duclaux, Agnes Mary Frances, née Robinson (1857-1944), poetess and novelist, b. Leamington. She married Prof. James Darmesteter, and, after his death, Prof. Duclaux, 1901. Her works include: *The Crowned Hippolytus of Euripides*; with *New Poems*, 1881; *Life of Emily Brontë*, 1883; *An Italian Garden: A Book of Songs*, 1886; *Collected Poems*, 1902; *The Return to Nature*, 1904; *Life of Émile Duclaux*, 1907; *The French Ideal*, 1911; *Madame de Sévigné*, 1914; *A Short History of France*, 1918; *Life of Victor Hugo*, 1920; *La Pensée de Robert Browning*, 1922; *Life of Racine*, 1925; and *A Portrait of Pascal*, 1927.

Duclos, Charles Pinot (1704-1772), Fr. author, b. Dinan, Brittany, sent at an early age to study at Paris. He began by writing short stories and novels, e.g. *Mme de Luz*, 1741, and *Confessions du comte de ...*, 1742. His first pub. of importance was his *Histoire de Louis XI*, 1745, and this was followed by *Considérations sur les mœurs de ce siècle*, 1751. He became a member of the Fr. Academy at the early age of 43, and succeeded Voltaire as historiographer of France. In the same year (1755) he was appointed permanent secretary of the Academy. See I. Lebourgo, *Duclos*, 1902.

Ductility, property of some metals, such as gold, silver, copper, iron, etc., which renders them capable of being extended by hammering or drawing, without breaking. Glass also possesses the property when in a semi-molten state, and quartz, when in an intensely hot state, can be drawn out into such thin fibres as to be almost invisible to the naked eye. Wollaston showed that by forming a platinum core inside a silver wire, afterwards drawing out the silver wire, he could, by dissolving the silver coating, obtain a finer platinum wire than he could otherwise have done by drawing out the platinum directly. The wire was so fine that it could only be seen when an electric current was sent through it and made it glow.

Ductless, or Endocrine, Glands. The function of a gland is the secretion of an individual product or products, which in many cases passes by means of a duct into a body cavity or to the surface; in the case of the D. G., however, the secretion passes into the blood by means of capillaries or lymphatic vessels. The secretions of the D. G.s are known as hormones (q.v.) and their function is to bring about specific changes in distant cells and organs. Thus the adreno-cortico-trophic hormone secreted by the pituitary gland (q.v.) influences the activity of the adrenal cortex (see SUPRARENAL). Examples of D. G.s are the thyroid, parathyroid, thymus, spleen, and adrenals. Their function is described under the appropriate headings. See also BIO-CHEMISTRY.

Duddington, par., vil. and loch in Midlothian, Scotland. D. was the II.Q. of Prince Charles before the battle of Prestonpans; it has a 12th cent. Norman church, where Sir Walter Scott was an elder. The loch, a well-known bird sanctuary, lies at the base of Arthur's Seat (q.v.). Pop. of par. 6000.

Duddon, riv. of England, which rises in the Wrynose, on the borders of Cumberland and Lancs. At Broughton it widens out into an estuary of over 2 m. wide, eventually losing itself in the Irish Sea. Salmon and trout are found above the mouth.

Duden, Konrad (1829-1911), Ger. lexicographer. He advocated a unified Ger. orthography, and compiled the *Rechtschreibung der Buchdruckereien deutscher Sprache*, 1903, and *Orthographisches Wörterbuch der deutschen Sprache*. These 2 eds. were later combined under the title of

Rechtschreibung der deutschen Sprache und der Fremdwörter, 1915. D.'s orthographical work was soon in common use in Germany, Austria, and Switzerland. From 1929 onwards the dictionary was referred to as *Der groasse Duden*, and many eds. have been pub.

Dudevant, Madame, see SAND, GEORGE.

Dudinka, tn in the Krasnoyarsk kray (Siberia), cap. of the Taymyr (q.v.) National Dist., and a riv. port on the Yenisey 250 m. from its mouth, accessible to sea vessels. It serves as the port of Noril'sk (q.v.) industrial area.

Dudintsev, Vladimir Dmitriyevich (1918-), Russian author. He received legal training. He fought in the Second World War and was severely wounded, then worked as public prosecutor at a military court and as industrial correspondent of a newspaper. His first literary attempts were influenced by Proust and Joyce. In 1950-5 he wrote his famous novel *Not by Bread Alone* (Eng. trans. by Edith Bone, 1957), a severe and merciless exposure of the Soviet social and political system and a hint to the 'Idealists,' who are shown to be struggling against it in various spheres of life, to band together and to concentrate on the political side. The pub. of the novel in 1956 was enthusiastically welcomed by the intellectual opponents of the regime as a revival of Critical Realism in Russian literature, and it was a major factor of widespread student unrest.

Dudley, Dud (1599-1684), iron-master, the originator of the use of pit coal for fuel in place of wood, which caused a profound change in the methods of iron-founding.

Dudley, Sir Edmund, see EMERSON, SIR RICHARD.

Dudley, Sir Henry Bate (1745-1824), earlier **Bate**, Eng. dramatist and journalist, b. Fenny Compton, Warwickshire. On completing his education he took orders and succeeded his father in the living of N. Farnbridge. He was one of the first editors of the *Morning Post*, estab. in 1772, his contributions frequently leading him into quarrels, and earning for him the nickname of the 'Fighting Parson.' He wrote 8 plays, including the farce *High Life Below Stairs*. D. also founded and ed. *The English Chronicle*, 1779, and the *Morning Herald and Daily Advertiser*, 1780. He was made a baronet in 1813.

Dudley, John, see NORTHUMBERLAND, DUKES OF.

Dudley, Robert, see LEICESTER, EARL OF.

Dudley, Thomas (1576-1653), colonial governor of Massachusetts, b. Northampton, England. In 1630 he sailed to America with Governor John Winthrop to settle in New England, D. himself being appointed deputy-governor. D. had great influence in Massachusetts, and was governor 4 times; he was one of the earliest promoters of Harvard College. He had little religious tolerance, being a stern Puritan. For an account of his Amer. voyage see A. Young, *Chronicles of Massachusetts Bay*, 1846. His son, **Joseph Dudley** (1647-1720), colonial governor of

Massachusetts, was b. in Roxbury, Massachusetts, and graduated at Harvard College, 1665. He was sent to London to prevent the revocation of the Charter of Massachusetts by Charles II. He secretly used his influence against his mission, to his own advancement. His whole rule was unpopular and his actions dishonourable.

Dudley, municipal co. and parl. bor. (D. with Stourbridge), 9 m. NW. of Birmingham, in a detached part of Worcestershire. Abundance of coal, ironstone, limestone, and refractory clay made D. of industrial importance from medieval times. Coal-mining existed in AD 1272, while the hand-wrought nail trade fl. in the early 16th cent., and D. has long been an important centre for coal-mining and iron-smelting; heavy engineering and glass- and brick-making have developed more recently. To-day mining has ceased and the largest industries are clothing manuf. and light engineering. D. has a co. cricket ground and a famous zoo, housed among the ruins and in the grounds of the 11th-cent. castle. Near by are the remains of a 12th-cent. priory. D. has technical and teachers' training colleges, and a fine civic centre. Pop. (1934) 65,239.

Dudley Limestone, see WENLOCK BEDS.

Dudok, Willem Marinus (1884-), Dutch architect, b. Amsterdam. R.I.B.A. Royal Gold Medallist, 1935. In 1915 he was appointed director of works at Hilversum, where he designed the tn hall (1938-51) and other buildings which have greatly influenced European architecture. Other works include the IJlenkorf Store at Rotterdam, 1929-30; the Dutch Hostel at the Cité Universitaire, Paris, 1927-8; sev. housing schemes; and many industrial and commercial buildings.

Dudweiler, tn of the Saarland, on the Sulz, 5 m. NE. of Saarbrücken (q.v.). It is a coal-mining centre, and has manufs. of electrical and precision equipment. Pop. 26,100.

Duel and Duelling (Lat. *duellum*, from *duo*, two), in modern significance an arranged combat between 2 persons to avenge an insult, a reflection upon the honour, or to settle matters of private dispute for which the law provides no remedy or such as is not deemed satisfactory. The person aggrieved is the challenger, and the preliminaries and all the arrangements of the combat are settled by the 'seconds,' the supporters of each party. The choice of weapons lies with the challenged party. The combat of 2 single persons to decide great questions dates back to prehistoric times; the tales of Hector and Achilles, of David and Goliath, indicated the practice, but the D. proper must be traced to a Teutonic institution, the judicial combat of 'wager of battle,' a form of legal trial of questions in dispute, which was regarded as an appeal to God to decide the justice of the quarrel or dispute. The custom spread over NW. Europe and in 516 the Burgundian king Gundobald legalised the judicial D. D. was condemned by Pope Nicholas I (858-67) and by many succeeding popes. The judicial combat

was formally abolished by Act of Parliament only in 1818, after the case of *Thornton v. Ashford*. In 1386 a judicial combat in the presence of Charles VI of France between one Jacques Legris and Jean Caronage led to the defeat of the former and the subsequent discovery of the real guilty party, a blow to the popular belief in the justice of the D. from which it did not recover. D. thus came to its present form as a means of settling private quarrels, especially among the gently born or the military classes; it was most prevalent in France, especially from the time of Francis I. It had grown to such an extent, and so many men of noble birth were slain, that in 1626 Richelieu confiscated the property of duellists and banished them from France. Stronger measures were required, and beheading was resorted to. In Great Britain, D. did not become fashionable till the Restoration. The fatal D. between Lord Mohun and the duke of Hamilton is familiar from Thackeray's *Henry Esmond*. In the eyes of the law, a challenge to a D. is a breach of the peace, a fatal result is a homicide, whether murder or manslaughter, and the seconds are accessories. Many historic D.s have been fought, as those between Pitt and Tierney, Canning and Lord Castlereagh, O'Connell and D'Esterre, the duke of Wellington and Lord Winchelsea. In 1840 Lord Cardigan wounded Capt. Tuckett, was tried by the House of Lords, and acquitted. At the present day D. still occurs in France, but rarely with fatal or serious results. In pre-war Germany, apart from the fencing bouts (*Mensur*) of the various student corps or clubs at the univs., the D. was of great importance for military officers. Though D.s were forbidden by law, an officer who refused a challenge, after a decision of a court of honour, must still fight or leave the army. See also *Fencing*. See M. Sutcliffe, *The Practice, Proceedings, and Lawes of Armes*, 1593; F. Bacon, *The Charge touching Duels*, 1614; J. Cockburn, *History and Examination of Duels*, 1677, 1720; S. Stanton, *The Principles of Duelling: with Rules*, 1790; A. F. Steeking, 'Fencing and Duelling,' in *Shakespeare's England*, 1916.

Duero, see **Douro**.

Duet (from It. *duetto*, and Lat. *duo*, two). In music, denotes a composition designed for 2 singers or 2 players whose parts are of equal importance. Instrumental D.s may be written for similar or different instruments; vocal D.s for voices of equal or different pitch.

Dufaure, Jules Armand Stanislaus (1798-1881), Fr. statesman, b. Sanjon. Under Guizot he became councillor of state (1836) and minister of public works (1839). Later, he was minister of the interior and minister of justice. In 1876 he became premier, but his policy ran counter to that of the senate and the president. He resigned, but was again premier 1877-9.

Dufay, Guillaume (c. 1400-74), Flem. composer of church music. He learnt music as a chorister at Cambrai Cathedral, and became a singer in the Papal Choir in

Rome. From 1440 to his death he was probably more or less continually attached to the cathedral of Cambrai, where he d.

Duff, Alexander William George, see **FIFE, DUKE OF**.

Duff, John Wight (1866-1944), classical scholar, b. Dundee. From 1891-93 he was assistant prof. of Greek at Aberdeen, and from 1893-8 prof. of classics and Eng. at Newcastle. He pub. *A Literary History of Rome*, 1909, 1927; *Writers of Rome*, 1923; *Minor Latin Poets* (with A. M. Duff), 1934; and *Roman Satire: Its Outlook on Social Life*, 1936; besides various articles in journals and magazines on Gk travel, trans. from Lat., etc.

Duff Cooper, see **NORWICH, VISCOUNT**.

Duff, or Wilson, Islands, group of 11 small is. in the Pacific Ocean, lying to the NE. of Santa Cruz.

Duffel, in in the prov. of Antwerp, Belgium, on the R. Nèthe. Pop. 13,000.

Dufferin, Helen Selina, Lady (1807-67), song-writer, granddaughter of Sheridan the dramatist. In 1813 she was taken by her parents to the Cape of Good Hope, but returned to England on her father's death in 1817. In 1825 she married Commander Blackwood, who succeeded as Baron Dufferin in 1839. After his death 2 years later she accompanied her son, the marquis of Dufferin and Ava, on his travels. In 1862 she married George Hay, earl of Gifford, on his death-bed. In 1863, after a trip up the Nile, she wrote *Lisplings from Low Latitudes*. Her songs, including the famous 'Lament of the Irish Emigrant,' were pub. in 1894.

Dufferin and Ava, Frederick Temple Hamilton-Temple Blackwood, 1st Marquis of (1826-1902), diplomat, b. Florence and educ. at Eton and Christchurch, Oxford. In 1860 he was appointed Brit. commissioner in Syria, where his ability and judgment were warmly recognised. From 1872 to 1878 was deputy governor-general of Canada, and in 1879 became Brit. ambas. at St Petersburg, afterwards filling the same position at Constantinople, Rome, and Paris. From 1884 to 1888 he was viceroy of India. In 1897 he was induced by Whitaker Wright to accept the chairmanship of the London and Globe Finance Corporation, and its subsequent financial collapse, for which he was not responsible, and the death of his eldest son in the S. African war embittered his last years. See life by Sir A. Lyall, 1905.

Duffield, small tn and par. in Derbyshire, England, 5 m. NW. of Derby, situated on the R. Derwent. Pop. 3000.

Dufftown, vil. in Banffshire, Scotland, founded by James Duff, earl of Fife, in 1817. It is a popular resort for invalids, and has whisky distilleries and lineworks. Pop. 1500.

Duffy, Sir Charles Gavan (1816-1903) at an early age drifted into journalism. Going to Dublin to study for the Bar, he founded in 1842 the *Nation*, which from the first became the organ of Young Ireland (q.v.). In season and out D. therein demanded the cleavage of the union, and sought to band his countrymen together to re-estab., by force if necessary, the

Irish Parliament. For preaching open rebellion D. was arrested in 1843, but the juries disagreeing, he was discharged. He revived the newspaper after his release, but the cause of Irish unity at that time seeming hopeless, in 1855 he abandoned the struggle. He went to Australia, entered the Victorian Parliament, and after holding minor offices, in 1871 became prime minister for a short time, and later speaker of the House of Assembly. He wrote sev. books on Ireland, including *Ballad Poetry of Ireland*, 1843, and issued a vol. of interesting *Conversations with Carlyle*, 1892.

Dufour, Guillaume Henri (1787-1875), Swiss gen. and cartographer, b. Konstanz, who, after service in the Fr. Army, reorganised the Swiss Army, which he commanded in the war which broke out in 1847 between the Protestants and Rom. Catholics on the question of the suppression of the Catholic Sonderbund. D. quickly brought hostilities to a close, thereby preventing the intervention of foreign powers; and his friendship and negotiations with Napoleon III were later instrumental in dispelling a threatened war with Prussia. In 1864 he presided over the international conference which framed the so-called Geneva convention as to the treatment of the wounded in time of war, etc. But the most important work of his life was commenced in 1833, when the Diet commissioned him to supervise a trigonometrical survey of Switzerland, which he accomplished with complete success at intervals between 1842 and 1865.

Dufourspitze, highest peak of Monte Rosa group on the Swiss-It. S. border. It has an altitude of 15,217 ft. and was named after Gen. Dufour (q.v.).

Dufrénoy, Pierre Armand Petit (1792-1857), Fr. mineralogist and geologist, became prof. of mineralogy and director of the École des Mines, and prof. of geology at the École des Ponts et Chaussées. In conjunction with Élie de Beaumont, with whom he travelled through France, England, and Spain, D. pub. *Voyage métallurgique en Angleterre*, 1827.

Dufresne, Charles, see DU CANGE.

Dufresnoy, Charles Alphonse (1611-66), Fr. historical painter and writer, b. Paris. He imitated Poussin and the It. masters, and he was a good colourist, but his name is mainly remembered in connection with his writings, the chief of which, *De arte graphica*, a lat. poem, a critical treatise on the practice of painting, had European renown.

Dufy, Raoul (1877-1953), Fr. painter and designer, b. Le Havre, where he studied art. Cézanne, Matisse and the Cubists all influenced him, but he developed a free and personal way of painting which had great charm and gaiety, his work being inspired by sport, the theatre, regattas, and spectacles of various kinds. The Luxembourg acquired his 'Paddock at Deauville' in 1932. He also illustrated books, designed silks for Bianchini Frier and a series of

tapestries; also decorations for the Electricity Pavilion, Paris Exhibition, 1937, and sev. stage settings.

Dugdale, Sir William (1605-85), Garter King of Arms, at an early age showed a love for antiquarian research. Through friendly influences he was in 1638 appointed a Pursuivant-Extraordinary, and in the following year Rouge Croix Pursuivant with rooms in the Herald's College and a salary of £200 a year. During the Civil war he went from library to library quietly amassing material for the important works upon which he was engaged, viz. the *Monasticon Anglicanum*, the 1st vol. of which appeared in 1655, and the 3rd and last 18 years later; *The Antiquities of Warwickshire*, 1656; and *The Baronage of England*, 1675-6. D. is not always to be relied upon for accuracy, but he rendered learned and valuable service to students of antiquity. His autobiography was first pub. in 1713, but the ed. to consult is that of 1827 (ed. by W. Hamper), to which is added his diary and correspondence.

Dugong, or Halibore, genus of the mammalian order Sirenia, or sea-cows. The few species are aquatic, usually marine, and in diet they are herbivorous; the existing forms are found in the Red Sea, Indian Ocean, and near Australia. They bear some resemblance to whales, e.g. in the notched tail and reduced nasal bones, lack of posterior limbs, and in the short neck, but in most of their characteristics they are quite unlike these mammals. The D. attains a length of 8 ft. and it is said to have originated the idea of the mermaid, for the female has 2 mammae, holds its young to its breast by means of one of its nailless flippers, and often raises its head out of the water. The teeth of this animal are 5 or 6 molars on each jaw, 2 incisors on the upper and 4 on the lower jaw. D.s differ from the other Sirenian, the manatee, in having the tail shaped like a whale's flukes and the jaws turned downwards to house a pair of tusks.

Duguay-Trouin, René (1673-1736), Fr. sea-captain, b. St. Malo. Originally intended for the Church, he abandoned the idea, and went to sea in 1689 on the outbreak of the war with England and Holland. He displayed great courage and made brilliant captures of Eng. and Dutch ships. In 1697 he entered the Fr. Navy as commander, distinguishing himself in the war of the Sp. Succession, his most famous action being the capture of Rio de Janeiro in 1711. He subsequently served with the army, attaining the rank of lieutenant-general.

Du Guesclin, Bertrand, see GUESCLIN.

Duhamel, Georges (1884-), Fr. novelist, b. Paris. He began his literary career as poet, essayist, and dramatist. He qualified as a doctor of medicine, and served in the First World War as a surgeon; the extremes of physical and mental suffering he witnessed lent him added force as a writer of anguished war books, passionately advocating the rights and majesty of the individual soul, his *Civilisation*, pub. in 1918, gaining for him the Prix Goncourt. But it is his later

novels that have won most recognition. The cycle *l'ie et aventures de Salavin* (5 vols.), 1920-32, Eng. trans. under the title of *Salavin*, 1936, are profound studies of a man who is the idealist in every man, and who tries to live up to a worthy philosophy of life and fails. His 10 vol. masterpiece, *Chronique des Pasquier*, 1933-43, presents human beings, not as they try and fail to be, but as they actually are, drawn with a realism tempered by sensibility, humour, and sympathetic understanding. The '*Pasquier Chronicles*' were trans. into Eng. by Béatrice de Holthoer. Later novels include *Patrice Périot* and *Cry Out of the Depths*. He became a member of the Fr. Academy (permanent secretary 1943-6) and of the Academy of Medicine and president of the Alliance Française. Other works include: *Les Plaisirs et les Jours*, 1922, a charming study of childhood; *Le Voyage de Moscou*, 1927; *Scènes de la Vie Future*, 1930; numerous essays and 4 vols. of autobiography. See D. Saurat, *Modern French Literature*, 1946; A. Terisse, *G. Duhamel*, 1951.

Duikerbok, *Cephalophus*, genus of small African antelopes (q.v.) with crested heads, large muzzles, and short, conical horns in the males only.

Duilius, Gaius, Rom. gen. who defeated a Carthaginian fleet off Mylae in 260 bc. This was the first naval victory the Romans had ever gained, and the memory of it was perpetuated by a column (*columna rostrata*) adorned with the beaks of the captured ships.

Duino, see **TRISTE**.

Duirinish, par. in the NW. of the Is. of Skye, in Inverness-shire, Scotland, 18 m. long by 15 m. wide, area 80,067 ac., pop. 2600. Lady Grange, a Jacobite heroine, was buried near a pillar called the Trying Stone of Trumpan. Dunvegan Castle is the seat of the Macleods of Macleod. This par. was celebrated for its pipers. The hills called 'Macleod's Tables' rise from the peninsula of D.

Duisburg (-Hamborn), Ger. tn in the Land of N. Rhine-Westphalia (q.v.), at the confluence of the Rhine and the Ruhr (qq.v.). Hamborn, a N. suburb, was incorporated with D. in 1929. D. is an anct tn. and in the Middle Ages belonged to the Hanseatic League (q.v.). It had a univ. 1655-1802. Two interesting old churches still remain, in one of which, the 14th-cent. *Sanktadelkirche*, is the tomb of Gerhard Mercator (q.v.). After the First World War the tn was occupied by Fr. troops from Mar. 1921 until Aug. 1925. During the Second World War great destruction was wrought in the tn by bombing attacks on industrial plants, while the damage sustained by the riv. docks and railway marshalling yards affected rail and riv. communications for hundreds of m. Amer. troops reached the suburbs on 30 Mar. 1945; when the tn fell, on 13 April, two-thirds of it was in ruins. Since the end of the war there has been a great deal of reconstruction, and D. is again the largest inland port in Europe; its harbour has 30 basins and 25 m. of quays. The tn is a great centre of the iron and steel industry, and has also

copper, chemical, textile, and tobacco industries. Pop. 472,800. See **RUHRORT**.

Dukas, Paul (1865-1935), Fr. composer, b. and d. Paris, studied at the Conservatoire. He taught the orchestral class there in 1910-13 and was then appointed prof. of composition, teaching there and at the Ecole Normale de Musique until his death. He wrote very little, composing slowly and with extreme care. His largest works are the opera *Ariane et Barbe-bleue*, 1907, the ballet *La Péri*, 1912, a symphony in C major, 1896, and the most popular *L'Apprenti sorcier*, 1897, a symphonic scherzo on Goethe's poem.

Duke (Lat. *dux*, a leader, Fr. *duc*) first came into use as a formal title when Constantine called military governors of provs. either counts or D.s. to distinguish them from the administrators of justice and finance. Under the Franks the D.s., who often ruled sev. provs., became very powerful, while the counts, who had once been the most distinguished of the prov. commanders, now became their lieutenants. Thus the E. Frankish empire was split up into the dukedoms of Swabia, Saxony, Bavaria, Franconia, and Lorraine, and similarly the W. into the duchies of Aquitaine, Burgundy, Gascony, Normandy, and the Ile de France. Although with the strengthening of monarchies the substantial powers of the D.s. waned, the latter still rank next to princes of royal blood. The Black Prince was the first Eng. D., being granted by his father the duchy of Cornwall, 1337, whilst the 1st Scottish king to confer the title was Robert III, who made his 2 sons D.s. of Rothesay and Albany respectively, 1398.

Duke of Albany's Regiment, see **SEA-FORTH HIGHLANDERS**.

Duke of Cornwall's Light Infantry, The, formerly the 32nd and 46th Regiments, which were linked together in 1881 to form the D. C. L. I. The 32nd was formed in 1702 as marines, and was present at the capture of Gibraltar in 1704. Served in Spain in 1705 under Lords Peterborough and Galway. Fought at Dettingen (1743) and Fontenoy (1745). Under Moore it fought at Corunna, and under Wellington during sev. battles of the Peninsular campaign. For its distinguished conduct during the Indian Mutiny it was made into a Light Infantry regiment. The 46th was raised in 1741, and served for many years in America, W. Indies, and India; in Crimean campaign, Egyptian campaign of 1882, on Nile 1884-5, and in S. Africa 1899-1902. Raised 15 battalions for First World War, which served in France, Flanders, Macedonia, Palestine, and Aden. In the Second World War the D. C. L. I. took part in the battle of Normandy and other battles on the W. Front. Other units fought on the It. front. It was especially prominent in the dour fighting for Goeh and on the Roer riv. and other battles in the advance to the Rhine and beyond. The D. C. L. I. will be amalgamated with the Somerset Light Infantry, by 1959.

Duke of Edinburgh's Regiment, see **WILTSHIRE REGIMENT**.

Duke of Wellington's Regiment (West Riding). The, formerly 33rd and 76th Foot. The 33rd was raised in 1702 and served in various campaigns in Spain and Flanders and at Dettingen. The future duke of Wellington commanded the regiment in 1794-5 and was later its colonel. It served under him at Waterloo. At his death in 1852 the regiment was given the title 'Duke of Wellington's' and granted his crest and motto as a badge. It also served in the Crimea. The 76th was raised in 1787 and served with great distinction in India, at Seringapatam, Allypore, Leswarree, and Deig. Later it went to the Peninsula and afterwards to Canada. The regiments were linked in 1881, and gained honours in the S. African War, 1899-1902. During the First World War 21 battalions were raised, which served in France, Flanders, Italy, Gallipoli, and Egypt. In the Second World War 1 battalion especially distinguished itself in the fight for Hill 102, just S. of Bristol, in the battle of Normandy (1944). The 7th Battalion, as part of the 147th Brigade of the 49th Territorial Div., also distinguished itself in Normandy. Later the regiment fought in the Nijmegen area. In the previous year the regiment added fresh laurels to its list by its part in the campaign of the First Army in Tunisia, notably in their gallant action at Banana Ridge (20 April). Other units of the regiment fought in the Burmese campaigns.

Duke of York's Monument, erected 1830-3 by public subscription in memory of the 2nd son of George III (see YORK, FREDERICK AUGUSTUS, DUKE OF). It stands in Waterloo Place, Pall Mall, London, on the site of Carlton House, which had belonged to his brother George IV when Prince Regent. The column, 124 ft high, was designed by Benjamin Wyatt, and the 14-ft statue surmounting it is by Sir R. Westmacott.

Duke of York's Royal Military School, Dover, a boarding school for the education of soldiers' sons from age 9 to 18. Strength 450 boys. Founded at Chelsea in 1801 by Frederick, duke of York (1763-1827), it was moved to Dover in 1909.

Duke of York's Theatre, in St Martin's Lane, London, England. It was opened in 1892 as the 'Trafalgar Square,' but later received its present name. Among the more notable plays first staged here were Pinero's *Letty*; Barrie's *Peter Pan* and *What Every Woman Knows*; Galsworthy's *Justice*; the farce *Brewster's Millions*; and the detective drama *Arsène Lupin*.

Duke Town, see CALABAR.

Duke University, institution for higher education at Durham, N. Carolina, U.S.A., founded in 1838 and known 1859-1924 as Trinity College, reorganised in 1924 as D. U. with an endowment from James B. Duke. It includes Trinity College (for men), the women's college, a college of engineering, a graduate school of arts and sciences, a divinity school, and schools of law, medicine, nursing, and forestry. With a teaching staff of 648

there were 5000 students in 1955. The libraries contained 1,100,000 vols. in 1954. Associated is the Duke Univ. Press.

Duker, Carl Andreas (1670-1752), Ger. classical scholar, studied under Perizonius at Franeker and subsequently brought out the 2nd ed. of Perizonius's *Origines Babylonicae et Aegyptiacae*, 1736. D.'s *magnum opus* was his ed. of Thucydides, 1731.

Dukeries, The, area in the N. of Sherwood Forest (q.v.), Notts, England, made up of estates originally belonging to 4 ducal families, comprising the parks of Welbeck, Clumber (now National Trust property), Thoresby, and Worksop.

Dukes, Ashley (1885-), dramatist and stage manager, b. Bridgewater, Somerset, son of a clergyman. Educ. at Manchester and Munich Univs., he became dramatic critic for various periodicals. During the First World War he served with the Machine Gun Corps. In 1933 he became manager of the Mercury Theatre, London, and in 1937 was appointed prof. of drama of the Royal Society of Literature. Among his plays are *The Man with a Load of Mischief*, 1924; *One More River*, 1927; *Such Men are Dangerous*, 1928; *Match-makers' Arms*, 1930; and *House of Assignment*, 1937. His books include *Modern Dramatists*, 1911; *The Youngest Drama*, 1921; *Drama*, 1926; and an autobiography, *The Scene is Changed*, 1943.

Dukes, Sir Paul (1889-), author and musician, b. Bridgewater, Somerset, brother of Ashley D. (q.v.). Educ. at Caterham School and Petrograd Conservatoire, he was head of the Brit. Intelligence Service in Russia during the First World War, and was afterwards *Times* correspondent in E. Europe. In 1920 he was made a K.B.E. His pubs. include *Red Dusk and the Morrow*, 1922; *The Story of 'ST 25'*, 1938; *An Epic of the Gestapo*, 1940; *Come Hammer, Come Sickle*, 1947; and *The Unending Quest*, 1950.

Dukhobors, or Doukhobors, Russian Nonconformist sect, whose name, meaning 'wrestlers with (i.e. against) the Spirit,' was given to them by the Orthodox archbishop of Ekaterinoslav in 1785. Their peculiar doctrines derive from Russian sectarian mysticism, heterodox Protestantism, and Rosicrucian Freemasonry. From 1755 to 1864 their leaders claimed to be reincarnations of Christ, whom they believe to have been only an inspired man, whose sufferings were merely exemplary, not redemptive. They reject the Trinity, except as modal manifestations of the one deity, and attach little importance to the Bible, as corrupt, their own doctrines being enshrined in their sectarian Psalter. They deny the fall, original sin, and the need of grace and salvation. They believe in the pre-existence of the soul and in reincarnation. They are strict non-resisters, do not believe in private property, and deny the right of the state to levy taxes, register births and marriages, or demand military service. Their heretical and anarchist views led Alexander I to banish them to Taurida, and

Nicholas I to Transcaucasia (1840-50). There they came in contact with Count Leo Tolstoy, who had great influence on their faith. In 1898-9, helped by him and the Eng. Quakers, they migrated to Canada and were settled in Saskatchewan. Their anarchism led to frequent conflicts with the Canadian state. Their last leader, Peter Verugin, d. in 1938. In 1940 they numbered c. 17,000, and had fallen into 3 groups, the strict observers, those inclined to merge into Canadian Protestantism, and the near-Communist. See J. F. C. Wright, *Slave Bohemians, The Story of the Dulchobors*, 1940; S. Bolshakoff, *Russian Nonconformity*, 1950; *The Doukhobors of British Columbia*, Brit. Columbia Univ., 1956.

Dukinfield, municipal bor. of Cheshire, Englund, 6 m. E. of Manchester. It is situated in a manufacturing dist., with cotton and calico printing works, iron foundries, and engineering, brick and tile, and rope works. Area 1723 ac.; pop. (1954) 18,445.

Dulac, Edmund (1882-1953), illustrator, b. Toulouse. As 'Edmond' D. he was educ. at Toulouse Univ.; he studied law for 2 years, and drawing and painting at Toulouse art school, and in Paris. He illustrated books from 1905, and exhibited portraits at the Paris salon, 1904-5. In 1912 he became 'Edmond' D., a naturalised Brit. subject. In his illustrations he adapted and westernised the colour and spirit of Persian art with conspicuous skill and success. Illustrations pub. include *The Iliad*, 1907; *Shakespeare's Tempest*, 1908; *Rubáiyát of Omar Khayyám*, 1909; *The Sleeping Beauty and other tales*, 1910; *Poe's The Hells and other Poems*, 1911; *Edmund Dulac's Fairy Book*, 1916; Hawthorne's *Tanglewood Tales*, 1918; weekly cartoons in *The Outlook*, 1919; *The Kingdom of the Pearl*, 1920; *Treasure Island*, 1927; *The Fairy Garland*, 1928; *Gods and Mortals in Love*, 1936; and postage stamps for the Fr. Provisional Gov., 1944.

Dulcigno, see ULCINJ.

Dulcimer, one of the oldest musical instruments, being found in Assyrian mural decorations. The different notes are obtained by striking wires, stretched with tuning pegs across a horizontal sound-chest, with 2 cork-headed hammers. The Hungarian *cimbalom* is an elaborate variant of it, and it is, so far as the hammer principle is concerned, a forerunner of the modern piano.

Du Ligier de la Garde, Antoinette, see DESHOULIÈRES, MADAME.

Dülken, Ger. tn in the Land of N. Rhine-Westphalia (q.v.), 20 m. W. of Düsseldorf (q.v.). It has metallurgical and other industries. Pop. 19,000.

Dulles, John Foster (1888-), Amer. statesman, b. Washington, D.C., and graduated from Princeton Univ., 1908; George Washington Univ., 1911. He also studied at the Sorbonne, Paris, 1908-9. D. was admitted to the New York Bar, 1911. He was a member of the U.S.A. delegation to the San Francisco Conference on World Organisation, 1945, and was

one of the U.S.A. delegates to the U.N., 1946, 1947, and 1950. He served in an advisory capacity to the secretary of state at various councils of foreign ministers. As special representative of the president, with the rank of ambas., he negotiated the Jap. Peace Treaty, 1951. On Eisenhower's election, D. was appointed secretary of state in 1952. His attitude on far E. and middle E. affairs has clashed with that of Britain on sev. occasions.

Dülmen, Ger. tn in the Land of N. Rhine-Westphalia (q.v.), 47 m. NNE. of Düsseldorf (q.v.). It has ant. fortifications, and once belonged to the Hanseatic League (q.v.). There is an animal reserve in which live the last wild horses in Germany. Pop. 14,000.

Dulong, Pierre Louis (1785-1838), Fr. physicist and surgeon, b. Rouen, pupil of Berthollet and Thenard. Early distinguished for the discovery of nitrogen trichloride, in the preparation of which he lost an eye and 2 fingers. Collaborated with Berzelius in the synthesis of water by the method of passing a current of dry hydrogen over red-hot copper oxide. But it is rather as a physicist that he acquired fame, particularly by his experiments in the theory of heat, to which he applied himself constantly from 1818. He also evolved the air nanometer for measuring the density of gases and the cathetometer for measuring small differences of level.

Dulse, popular name given to 2 species of edible seaweeds, *Rhodymenia palmata* and *Uluidia edulis*.

Duluth, port city, cap. of St Louis co., Minnesota, U.S.A., on rocky bluffs at W. end of Lake Superior, at mouth of St Louis R. Icebound 4 months in the year, it leads in the shipment of iron ore, grain, flour, and dairy products, and manufs. farm and telephone equipment, wood and metal products. It has the commission form of gov. The college of St Scholastica and the D. branch of the univ. of Minnesota are here. Other points of interest: 27-m. Skyline Parkway, Aerial Lift Bridge over D. ship canal, D. public library, D. playhouse, D. symphony orchestra, children's museum and art centre. Pop. 104,500.

Dulverton, par. and tn of W. Somersetshire, Eng., 21 m. W. of Taunton. It is a fishing and hunting resort, and is the H.Q. of the W. Somerset Yeomanry. Pop. 1500.

Dulwich, residential suburb of London, and a parl. div., forming the S. part of the bor. of Camberwell (q.v.). The manor of D. once belonged to the abbey of Bermondsey, and was eventually acquired by Edward Alleyn, the founder of D. College (q.v.). D. was a vil. until developed in the 19th cent., and it still retains something of its former character. The Picture Gallery, a small but important collection with a fine representation of the Dutch school, was originally founded by Noel Desenfans, who bequeathed it to Sir Francis Bourgeois (q.v.); with additional pictures the latter bequeathed it to D. College. D. Park, a

fine open space, was presented to the public in 1890. Pop. 60,000.

Dulwich College, public school for boys, founded at Dulwich in 1619 by Edward Alleyn, the Elizabethan actor-manager, as the College of God's Gift. The foundation was originally for a master, a warden, 4 fellows, 12 poor scholars, and 12 almshouse people. In 1857 the college was reconstituted by a special act of parliament, and formed into D. C. and Alleyn's School (also in Dulwich).

Duma (Russian 'deliberation'), name of various representative assemblies in pre-Soviet Russia, such as the Boyars' D. (see BOYARS), the tn councils, and the State D. The latter was estab. by the 1906 Constitution as a lower house of the legislature (the upper being the State council, which had existed since the early 19th cent.). All property-owners and taxpayers were enfranchised, and except in the 5 largest cities elections were indirect, through electoral colleges based on social classes. Ministers were not responsible to the D., though they could be questioned by its members. The D. could initiate legislation and no law could become effective unless passed by the D. and the State council, and signed by the emperor. There were 4 D.s between 1906 and 1917. The first 2 had large radical anti-gov. majorities and were speedily dissolved; a change in the electoral law ensured that the next 2 had right-wing majorities. Although imperfect from the point of view of democratic requirements and effectiveness, towards the end of the period the D. was developing into a properly working parliamentary institution. Upon the abdication of Nicholas II in Feb. 1917 the provisional committee set up by the D. entrusted Prince Lvov (q.v.) with the formation of a provisional gov. (q.v.). See B. Pares, *Russia and Reform*, 1907; S. N. Harper, *The New Electoral Law for the Russian Duma*, Chicago, 1908; W. F. Dodd, *Modern Constitutions*, vol. 2, 1909; A. Levin, *The Second Duma*, New Haven, 1940.

Dumaguete, cap. tn of the prov. of Negros Oriental, is. of Negros, Philippine Is., on the Tañon Strait. It lies in a fertile agric. dist., and is an important commercial centre and the seat of Silliman Univ. It exports copra, hemp, and sugar. Pop. 24,838.

Dumangas, city in the prov. of Iloilo, Panay, Philippine Is. It produces rice. Pop. 22,336.

Dumanjug, tn in the prov. of Cebu, is. of Cebu, Philippine Is., on the W. coast on Tañon Strait. It grows coconuts and corn. Pop. 19,630.

Dumas, Alexandre, père (1803-70). Fr. novelist and playwright, b. Villers-Cotterets, son of Gen. D., a Creole: he lost his father when he was only 4 years of age and, for a time, led a chequered life, until, goaded by poverty, he went to Paris to seek his fortune. Later, while serving as a clerk to the Duc d'Orléans, he devoted his leisure to play-writing. His success was immediate, for the vaudeville, *La Chasse et l'Amour*, which he wrote in collaboration with 2 friends, was produced at

the Ambigu Comique in the autumn of 1825. Thus encouraged he composed plays, writing comedy, drama, tragedy, in prose and in verse, with equal facility, until the production of *Madame de Chamblay* in 1868. Some of the plays were good; others were absurdly bombastic; some, such as *Kean*, 1838, frankly (and unconsciously) ridiculous; but whatever their merits or demerits, the author's knowledge of the stage was generally equal to making them successful for the moment. It is, however, not D. the playwright who is now remembered, but D. the novelist. In fiction his first effort was



ALEXANDRE DUMAS (PÈRE)

Souvenirs d'Anthony, 1835, a collection of short stories; this was followed by *Isabel de Bavière*, and *Adèle*, 1839. The most famous of all his books is the *Montesquieu* series—*Les Trois Mousquetaires* (8 vols.), 1844, *Vingt Ans après* (10 vols.), 1845, *Le Vicomte de Bragelonne* (26 vols.), 1848-50. The 2 other prin. series are: (1) *Joseph Balsamo*, 1846-8, *Le Collier de la Reine*, 1850, *Angé Pitou*, 1853, *La Comtesse de Charny*, 1853-5; (2) *La Reine Margot*, 1845, *La Dame de Monsoreau*, 1846, *Les Quarante-Cinq*, 1848. *Le Comte de Monte Cristo* appeared in 12 vols. in 1845. In the novels mentioned D. is at his best. *Les Trois Mousquetaires* is one of the world's masterpieces. Its faults are obvious, but are of little importance in face of the overpowering merits of the book. The weaknesses of exaggeration, bombast, historical blunders are outweighed by the wonderful high spirits, the miraculous adventures, hair-breadth escapes, splendid fights, indomitable courage, continued resourcefulness of the heroes of D. D'Artagnan, Athos, Porthos, and Aramis, Milady, Chicot, and the rest have taken their place in the world's literary portrait gallery. D. was epic in his writings. He conceived largely, and executed his conception on the grand scale. He lets his characters reveal

themselves as the story proceeds, never halting to indulge in psychological studies. Yet these are living human beings, not only the outstanding figures on the vast canvases, but those who occupy minor positions. D. was unhappy in his marriage and wasted all his fortune in gross extravagance. He d. at Puy, near Dieppe, broken in health and impaired in intellect, ministered to by his son and daughter. D. wrote his own *Mémoires* as far as 1832 (22 vols., 1852-4), but they cannot be regarded as a very trustworthy guide. His complete dramatic works were pub. in 5 vols. in 1874. See J. Lucas-Dubreton, *La vie d'A. Dumas, père*, 1928; H. Gorman, *The Incredible Marquis*, 1929; J. Charpentier, *Alexandre Dumas*, 1947; A. Craig Bell, *Alexandre Dumas*, 1950.

Dumas, Alexandre, fils (1824-95), Fr. dramatist and playwright, natural son of A. D., père. His whole career presents a strange contrast to that of his father, and the same may be said of his literary productions. He shows, after the preliminary period in which he sowed his wild oats, a moral force and earnestness that make his plays almost social sermons. His true literary experience begins with the pub. of *La Dame aux Camélias* in 1848. Not only does this novel treat the common romantic theme (as in Victor Hugo's *Marion Desorme*) of the courtesan brought back to virtue by honest love, it also furnishes some autobiographical notes. His succeeding novels, though all readable, are commonplace. The dramatisations of *La Dame aux Camélias* and *Diane de Lys*, first played in 1852 and 1853 respectively, mark an epoch in his own career and in that of the Fr. stage. Henceforward, though he did not give up the novel, his best work was given to the drama, and his success was great. Almost all his 17 plays are masterpieces of construction and style. Each of them on its appearance gave rise to lively discussion, which he treats in his celebrated prefaces. In *Le Demi-Monde*, 1855, he treats the social question arising from the existence in society of this class. He strikes the same note of warning to the youth of France in the plays *L'ami des Femmes*, *La Princesse Georges*, *L'Étrangère*, and other reforms in the social or legal sphere are also advocated in *Le Fils Naturel*, 1858, and *Un Père Prodigé*, 1859. In 1874 he was made a member of the Institute. Other important plays include: *La Question d'argent*, 1857; *Les Idées de Madame Aubray*, 1867; *Une Visite de noces*, 1871; *Dante*, 1885. See C. Noel, *Les Idées socialistes dans le Théâtre de Dumas fils*, 1912; P. Lamy, *Le Théâtre de Dumas fils*, 1928.

Dumas, Jean Baptiste André (1800-84), Fr. chemist, b. Alais, studied chem. in Geneva, and was carrying on original research before he was 21. In 1823 he migrated to Paris. In 1824 he founded the *Annales des Sciences Naturelles*. Under the Second Empire he served for a time as master of the mint (1868). His idea of substitution (metalepsis), which he supported by proving the similarity in

properties between acetic acid and trichloroacetic acid (where chlorine has replaced the original hydrogen), assisted largely in the correction of the atomic theory, whilst he also discovered ingenious methods of ascertaining the amount of nitrogen in organic compounds, and of estimating the densities of gases. His works include *Traité de chimie appliqué aux arts*, 1828; *Leçons sur la philosophie chimique*, 1883; and *Essai de statique chimique des êtres organisés*, 1845.

Du Maurier, Daphne (1907-), novelist, b. London. A daughter of Sir Gerald du M. (q.v.), she wrote his life in *Gerald*, 1934, and a record of 3 generations in *The du Mauriers*, 1937. In 1932 she married Lt.-Col. F. A. M. Browning, D.S.O., who became comptroller of Princess Elizabeth's household. Her novels include *The Loving Spirit*, 1931; *I'll Never Be Young Again*, 1932; *The Progress of Julius*, 1933; *Jamaica Inn*, 1936; *Rebecca*, 1938; *Frenchman's Creek*, 1942; *Harbour Hill*, 1943; *The King's General*, 1946; *My Cousin Rachel*, 1951; *Mary Ann*, 1954; and *Scapgoat*, 1957. *The Apple Tree*, 1952, is a book of short stories.

Du Maurier, George Louis Palmella Busson (1834-96), artist and writer, b. Paris, was the son of a Fr. émigré and an Eng. mother. After studying chem. at Univ. College, London, and art in Paris and Antwerp, where he lost the sight of one eye, he settled in London in 1860. His drawings appeared in *Once a Week* and *Cornhill Magazine*, but it is as a *Punch* artist that he lives. In its pages he drew pretty women, spruce nurse-maids, happy children, and proud fathers just as they ought to appear in 'good society,' but he also satirised alike the Victorian Philistine ('Sir Gorgius Aldes') and the devotees of the Aesthetic craze. His novels, including *Trilby*, 1894, and *The Martian*, 1897, share the charm and wit of his illustration. *Trilby*, his most famous work, was based on his experiences at Gleyre's art school in Paris, 1856-7, where he was the friend of Poynter and Whistler. See T. Armstrong, *Reminiscences of du Maurier*, 1912; Daphne du M., *The du Mauriers*, 1937.

Du Maurier, Sir Gerald (1873-1934), actor-manager, knighted in 1922, was the younger son of George du M. He made his stage debut at the Garrick Theatre, 1894, and was in Barrie's *The Admirable Crichton*, 1902. He was the original Capt. Hook in *Peter Pan*, 1904. Other successes were in *Raffles*, 1906; *Bulldog Drummond*, 1921; *Behold we Live*, 1932. Films: *Escape*, 1931; *I was a Spy*, 1933; *Catherine the Great*, 1934. He was actor-manager at Wyndham's Theatre for many years.

Dumb Cane, or *Dieffenbachia seguine*, genus *Araceae*. The plant occurs in tropical America, and has an acrid juice, which causes dumbness in one who chews the stem. The natives made use of this in the torturing of slaves.

Dumbarton, burgh and co. tn of Dumbartonshire, Scotland, on the R. Leven near its confluence with the Clyde, 14½ m. NW. of Glasgow. Formerly the cap. of

Strathclyde, it was named *Dunbreacan* (fort of the Britons) by the Gaels. The fortress and castle on the basaltic Rock of D. (240 ft) are rich in historical interest. Wm Wallace was confined within its walls in 1305, and in 1571 it was captured, after a brilliant assault, by Crawford for King James. After Clydebank it is by far the most important shipbuilding centre in the co., and there are also extensive engineering works, brass and iron foundries, an aircraft factory, and a modern distillery. Pop. 23,700.

Dumbarton Oaks Conversations, C. on world organisation between Britain, U.S.A., Russia, and China, at Dumbarton Oaks near Washington, from 21 Aug. to 7 Oct. 1944. The outcome of these talks was agreement on tentative proposals for the estab. of a general international organisation, under the title of the United Nations, which should serve as a basis of discussion at a future full U.N. conference. It was also agreed that the charter of this organisation ('U.N.O.') should provide for the purposes, principles, membership, and prin. organs of the organisation. These purposes were, primarily, to maintain international peace and security and to take effective measures for the prevention and removal of threats to the peace and the suppression of acts of aggression or other breaches of the peace, and to bring about by peaceful means settlement of international disputes which might lead to a breach of the peace. These purposes, and the principles on which the organisation was to be based, are reproduced in the charter adopted at the San Francisco Conference (n.v.) held in June 1945. The D. O. talks were pub. as Cmd 6560 (H.M.S.O.), 1944.

Dumfriesshire, see DUMFRIES-SHIRE.

Dumbness. By the ancients D. was thought to be, not the natural result of deafness, but the consequence of some brain trouble, or incapacity of the vocal organs, and by some was imagined to be possession by an evil spirit. Pedro Ponce de Leon (1520-84), a Spaniard, was the first instructor of the deaf and dumb, teaching many of them to speak, read, and write. There are 3 prin. methods in the instruction of the deaf and dumb: the oral, the sign and manual, and the combined method. The oral method instructs by and through speech; the pupils learn to pronounce the elemental sounds of the language, and to read from the lips. The 2nd method is by a language of signs, and the 3rd combines speech, lip-reading, writing, and signs. See also DEAF AND DUMB.

Dumb-Dum, or **Dam-Dam**, tn of W. Bengal state, India, 7 m. from Calcutta. It was the H.Q. of the Bengal artillery from 1783 to 1853, and is reputed to be the place of origin of the soft-nosed bullets called after it. The cantonment is now largely derelict. It is the site of the aerodrome for Calcutta.

Dumfries, burgh and co. tn of Dumfriesshire, Scotland, on both banks of the R. Nith, 33 m. NW. of Carlisle, formed by the amalgamation of 2 tns., D. and Maxwelltown, in 1929. Two foot and 2 traffic

bridges span the riv.; the 1st stone foot-bridge (c. 1425) probably replaced a wooden bridge built in 1280. The site of the Franciscan monastery where Bruce slew the Red Comyn is now partly built on: at Castledykes a stone marks the site of the old castle of D. which Bruce captured after the Red Comyn's death. Greyfriars Church stands on the site of the old castle of the Maxwells. SW. of D. is Sweetheart Abbey, whose last abbot, Gilbert Brown, is believed to have been the original of Scott's *The Abbot*. The abbey was founded in 1275 by Devorgilla, who with her husband also founded Balliol College, Oxford. Here in 1300 Edward I received the papal bull ordering him to cease the oppression of Scotland. At the County and Commercial Hotel is the room where Prince Charles Edward held a levée in 1745. Six m. N. of the tn is Ellisland Farm, occupied by Burns from 1788 to 1791; he then moved to D. where he d. in 1796. His body lies under the mausoleum in St Michael's churchyard. There are relics of Burns, Carlyle, and Scott in the Burgh Museum. Burns House, Hole of the Wa' Inn, and Glove Inn. The Midsteeple in High Street, once the court house, is the place of the trial of Elsie Deans, described in *The Heart of Midlothian*. Near by is a statue of Henry Duncan, founder of savings banks. J. M. Barrie was educ. for some years at the academy here, and some of the imaginative games that he played and directed in the neighbourhood were reflected later on in the legend of *Peter Pan*. There are important cattle marts, and manufs. include ardl (I.C.C.I.), rubber, agric. machinery, and hosiery. Pop. 26,300.

Dumfriesshire, border co. of Scotland, bounded on the N. by the coos. of Inverclyde, Peebles, and Selkirk; on the E. by Roxburgh; on the S. and SE. by Cumberland and the Solway Firth; and on the W. by Kirkcudbright and Ayr. There are numerous traces of early Brit. settlements, and of the Rom. occupation, including Rom. fortifications at Birrens. At Ruthwell is preserved a remarkable 7th-cent. cross. The co. has associations with Burns and Carlyle. The N. of the co. is highland, including White Combe (2695 ft) and the Lowther Hills (2377 ft). The valleys of the 3 prin. rivs., the Nith, Annan, and Esk, divide the co., flowing from N. to S. In the N. lies Loch Skene (1750 ft above sea-level), giving rise to the beautiful waterfall called Grey Mare's Tail. Railways ascend Nithsdale and Annandale, and Eskdale as far as Langholm. Cattle and sheep rearing are the chief occupations; hosiery manuf. and woollen milling are also carried on. Dumfries is the co. tn; Annan, Langholm, Lochmaben, Lockerbie, Moffat, and Sanquhar are other burghs. The co. returns 1 member to Parliament. Area 1073 sq. m.; pop. 85,660.

Dümichen, Johannes (1833-91), Ger. Egyptologist. His series of learned works on Egypt, including *Geographische Inschriften altägyptischer Denkmäler*, 1865-85, was the fruit of extensive travel and

original research, especially into inscriptions.

Dumnonii, see DAMNONII.

Dumont, Alberto Santos-, see SANTOS-DUMONT.

Dumont, François: 1. (1688-1726) Fr. sculptor, b. Paris and d. Lille. He studied under his father, and first gained distinction with a figure of David, and of a Titan. He afterwards executed a number of monuments and works for churches, and d. as the result of a fall while erecting the tomb of the duke of Melun. His son Edmé executed the well-known statue of Milon of Crotona testing his strength, which is in the Louvre.

Other members of this artist family were Edmé's son, *Jacques Edmé D.* (1761-1844) and grandson, *Augustin Alexander D.* (1801-84). See G. Vattier, *Une Famille d'Artistes*, 1890.

2. (1751-1851) Fr. miniature-painter. Executed portraits of Louis XVI and his queen, and Charles X. Many of his best works are in the Louvre.

Dumont, Pierre Etienne Louis (1759-1829), Fr. writer. His *Souvenirs sur Mirabeau*, 1832, is of interest, both because the author was a personal friend of the Fr. statesman—he is said to have composed some of Mirabeau's speeches—and because it gives the impression which the Fr. Revolution made upon a discerning eye-witness. See J. Martin, *Etienne Dumont, 1759-1829*, 1942.

Dumont d'Urville, Jules Sebastian César (1790-1842), Fr. navigator. b. Condé-sur-Noircau, was an accomplished linguist and student of entomology and botany. It was he who discovered and recognised the priceless Venuus de Milo. The find occurred during a hydrographic survey of the Mediterranean in 1820. In 1830 he was in charge of the ship which took Charles X to England. In 1838 he sailed for the Antarctic and discovered Joinville Is., Louis Philippe Land (now Trinity peninsula), and later (1840) Terre Adélie. The narrative and scientific results of his voyage of 1837-40 were pub. in 23 vols. of text and 7 atlases as *Voyage au Pôle sud et dans l'Océanie*, Paris, 1851-4. See *Bulletin de la Soc. de Géogr.*, Vol. 19, 1843.

Dumouriez, Charles François (1739-1823), Fr. gen., b. Cambrai. In 1757 he entered the Fr. Army and fought under his father, a commissary royal, during the Seven Years War. He was afterwards sent as an envoy to Poland and Sweden, but while engaged in the latter country he fell into disgrace, and, being recalled, was imprisoned in the Bastille. On the succession of Louis XVI he was released, and was soon made commandant of Cherbourg, where he did much to improve the naval administration. On the outbreak of the revolution he took the popular side, ultimately becoming connected with the Girondins, by whose influence he was made minister of foreign affairs. He resigned this post to receive command of the army in the N., and carried on a successful campaign against the duke of Brunswick. It was by his exertions that the latter was defeated at the battle of Valmy, and France was saved from the dangers of in-

vasion. Later in the same year he pressed into the Austrian Netherlands and won the victory of Jemappes. In 1793 his career of conquest came to an end. He had attempted to make arrangements for the restoration of the monarchy, and he was charged with treason. Four commissioners were sent to arrest him, but he captured them and took refuge with the Austrians. He was not able to remain there long, and wandered throughout Europe with a price on his head, settling finally in England, where he assisted in the preparation of plans for the defence of the country against Napoleon. Of his numerous pubs. the most important is his *Mémoires*, 1796.



GENERAL DUMOURIEZ

Dumping. In its restricted business meaning D. refers to the method of disposing of superfluous stock at a low price where its sale will not affect the regular business. But in its wider economic meaning it denotes the export sale of a commodity at a price lower than that in the domestic mkt. It became prominent in the 19th cent. Cartels or trusts used D. to kill competition. But it is a common complaint of industries facing competition from imported goods that the imports are being sold 'below cost': this charge is as difficult to establish as it is to refute, because it is difficult to lay down what the level of costs are that should be covered by the prices. Laws imposing additional duties on dumped goods have been passed in Canada, in the Union of S. Africa, in U.S.A., Great Britain, Australia, and New Zealand.

Dun, a fortress or fortified hill, often appears as an element in Celtic place names, one of the most famous being Dumbarton, originally Dun Breton, i.e. the fortress of the Britons, which was the cap. of Strathclyde, the Brit. or Celtic part of unct Scotland. Other similar formations are Dunbar, Dunformline, Dumfries, and Dundalk.

Dun, *Oxbird*, or *Calidris alpina*, species of Charadriidae which inhabits the N.

parts of both the Old and the New World, and frequents flat coasts and tidal rivers of Britain. The colours of this sandpiper are reddish black, white, and grey, and both bill and feet are black; in winter the plumage is grey and white. In habit it is gregarious.

Dun Laoghaire (formerly **Kingstown**), tn, bor., and seaport of Dublin co., Rep. of Ireland, situated on Dublin Bay, 6 m. from the city. It is the mail-packet station for communication with Holyhead, and has a royal harbour, which may be entered by vessels drawing 24 ft at any state of the tide. D. L. is a popular holiday resort, with 3 yacht clubs; it is also a fishing centre. Pop. (of bor.) 47,963.

Duna, see **DANUBE**.

Düna, see **DVINA**.

Dünaburg, see **DAUGAVPILS**.

Dunaföldvár, tn of Hungary, in Tolna co., on the Danube (q.v.), 28 m. NNE. of Szekszárd (q.v.). It is a riv. port and market tn, and has hemp, flax, and fishing industries. The insurgents were in control of the tn during the anti-Russian risings of Oct.-Nov. 1956. Pop. 11,500.

Dunajec-San, **Battles of**, The R. & D. and S. both run N. from the Carpathians in Galicia. During the First World War their direction, and the fact that Tarnow is situated on the former and Przemyśl on the latter, brought them into prominence. In their advance the Russians swept over these areas in Sept. 1914, and reached Tarnow. The fact that the Russians had been reinforcing their Carpathian front at the expense of the Tarnow area decided the Central Powers to attempt a break-through at that place, which, had it succeeded, would have 'rolled up' the Russian forces on the Carpathians. The Germans withdrew a number of divs. from the W. front, and these, together with an Austro-Hungarian force, the whole under the command of Gen. von Mackensen, were concentrated in Galicia for the operation. The attack opened on 2 May 1915, and, owing to the intense preparatory bombardment, the Russians gave way almost everywhere, and the lower Dunajec was crossed during the same day. The tactical combinations of their opponents were too much for the Russians. Tarnow was evacuated on 5 May, after a desperate struggle. The Russians were attacked again on 8 May, and by the night of 12 May the Central Powers were threatening their positions on the San, particularly Przemyśl. By 24 May the struggle for the fortress had begun, and by the first week of June they were forced back from the San.

Dunant, Jean Henri (1828-1910), Swiss philanthropist. See **RED CROSS**. For his biography see E. Hart, *Man Born to Live*, 1953.

Dunash ben Labarat (930-70), Jewish poet and grammarian, b. Bagdad. Not only was he one of the first to treat grammar scientifically, but he also wrote the earliest known specimen of metre in the Jewish language, his verse being an imitation of the Arabic.

Dunbar, Agnes, see **BLACK AGNES**.

Dunbar, Earls of, **Cospatrik** was created 1st earl of D. by his kinsman, Malcolm III., and in 1072 received from him the grant of the tn of D. with the surrounding lands of Lothian.

Patrick (1284-1368), 10th earl, sheltered Edward II in 1314 after the battle of Bannockburn at D. Castle. He married 'Black Agnes,' the sister of the Randolph who led the centre of the Scottish forces at that battle. 'Black Agnes' herself is famous for her defence of D. Castle against the Eng. under Salisbury in 1337, when she successfully held the castle for 5 months.

George, the 12th earl, was deprived of his title and estates by James I of Scotland in 1434. In 1605 the title was revived in favour of George, 3rd son of Alexander Home of Manderston.

Dunbar, William (c. 1460-c. 1520), greatest of the old Scottish poets, is generally supposed to have been born in E. Lothian and educ. at St Andrews. Practically nothing is known of his early life, and little of his later. He early entered the order of the Friars Minor (Franciscan), but gave this up in disgust. Thereafter he appears to have been employed by James IV in some court and political business. His chief poems are *The Thistle and the Rose* (The Thistle and the Rose), in which he celebrates James's marriage with Margaret Tudor (1503); *The Dance of the Seven Deadly Synns*, an allegory, before 1508; *The Golden Targe*, 1508, another allegory; and various lyrics of which the most notable is (c. 1507) *The Lament for the Makaris* (poets of Scotland and England). In all these there is true poetry. In his allegorical poems D. follows Chaucer in his setting, and is thus more or less imitative and conventional: in his satirical pieces and lyrics he takes a bolder flight and shows his native power. His comic poems are somewhat gross. The date and circumstances of his death are uncertain, some holding that he fell at Flodden, others that he was alive as late as 1530. Other works are *The Morte and The Nightingale*, and *The Flouting of Dunbar and Kennedy*. D. is described by Sir E. Gosse as 'the largest figure in English literature between Chaucer and Spenser.' He has strength, swiftness, humour, and pathos, and his descriptive touch is vivid and full of colour. There are eds. of his poems by D. Laing, 1834; J. Small, 1893; J. Schipper, 1894; and W. M. Mackenzie, 1932. See also J. Paterson, *Life and Poems of Dunbar*, 1880; J. Schipper, *William Dunbar: Sein Leben und Gedichte*, 1884; C. Steinberger, *Étude sur William Dunbar*, 1908; R. A. Taylor, *Dunbar*, 1932; J. W. Baxter, *William Dunbar: a Biographical Study*, 1953.

Dunbar, burgh and fishing port of E. Lothian, Scotland, 29½ m. ENE. of Edinburgh by rail. There are 2 harbours at the entrance of the Firth of Forth. The castle and Grey Friars monastery, which dates back to 1218, are both picturesque ruins. The former was captured by Edward I (1296), and offered refuge to Edward II after Bannockburn (1314), to the unfortunate duke of Albany (1479), and twice to Mary Queen of Scots. Close

by is the scene of the battle of Dunbar (1650). Pop. 4000.

Dunbartonshire, co. of Scotland, bounded on the N., E., and SE. respectively by the cos. of Perth, Stirling, and Lanark, on the S. by the Clyde, and on the W. by Loch Lomond (a beautiful salt-water inlet) and Argyll; there is also an enclave of the co. to the E., bounded on the N. by Stirlingshire and on the S. by Lanarkshire. There are traces of the Antonine Wall, estab. under the Rom. occupation c. AD 142 to link the forts built by Agricola and to hold back the N. tribes. The co. is mountainous in the W. and NW., with Ben Vorlich (3092 ft), Ben Vane (3004 ft), and at least 10 other peaks over 2000 ft; in the S. rise the Kilpatrick Hills. The chief rvs. are the Clyde, with its affluent the Leven, and the Kelvin; the prin. glens of the uplands are Glens Sloy, Douglas, Luss, and Fruin. The splendid scenery of Loch Lomond attracts many visitors. Large dairy farms have been estab. in the co. and highly intensive cultivation is successfully adopted. Coal is mined at Kirkintilloch; Clydebank and Dunbarton (the co. tn) are engaged in ship-building; and Alexandria, Renton, and Bonhill are concerned with bleaching, Turkey-red dyeing, and printing cottons and other fabrics. Strathleven industrial estate, lying between Dunbarton and Alexandria, has manufs. of clocks and adding machines. The co. returns 2 members to Parliament. Area 244 sq. m.; pop. 164,300.

Dunblane, burgh and mrkt. tn on Allan Water, 14 m. SSW. of Crieff, in W. Perthshire, Scotland. Woollen goods are manufactured, but the chief interest of the tn is historic. The cathedral, which was rebuilt in 1240 by Bishop Clemens, is in the Early Pointed style, with a fine W. window. An account of St Blaas and of the early foundation of the See of D. may be found in the works of Dowden and A. O. Anderson. D. was an important place in the Middle Ages; being not only the seat of an old diocese, but, lying near Stirling, where Eng. kings often resided, it played no small part in our national hist. See A. B. Barty, *The History of Dunblane*, 1945.

Duncan I (d. 1040), king of Scotland, succeeded his grandfather (on his mother's side) Malcolm II in 1034. He was regarded as an usurper by many of his subjects and his title contested, notably by Macbeth, who killed him in 1040.

Duncan II (d. 1094), king of Scotland, son of Malcolm Canmore, whom he succeeded in 1093. He was supported in his claim to the throne by England against his rivals Edmund and Donald Bane. D. was murdered at Donald Bane's instigation.

Duncan, Henry (1774-1846), founder of savings banks, b. Lochrutton, Kircudbrightshire, Scotland. He was intended for a commercial life, but left it for the Church, and in 1798 was ordained minister of Ruthwell in Dumfriesshire. He was remarkable for the breadth of his views and the diversity of his interests. He was capt. of a company of volunteers, an ardent antiquarian and geologist, the

publisher of a popular series of tracts entitled *The Cottage Fireside*, the editor of *The Dumfries and Galloway Courier*, and the author of *The Sacred Philosophy of the Seasons*, 1836. His most important labours were connected with the estab. of savings banks, the first being instituted at Ruthwell in 1810, and later, through his efforts, they were estab. all over the country. See life by his son, 1848.

Duncan, Isadora (1878-1927), Amer. dancer and pioneer in the revival of '18 classical poses and barefoot dances with flowing draperies; b. San Francisco, she had appeared on the Amer. stage before emigrating with her family to Europe. She was appreciated more in Europe than in America. In 1904 she founded a school in Berlin, and visiting Russia in 1905 she created a strong impression on Fokine and thus, through him, her art had an influence on ballet. Her life was, however, marred by tragedy: in 1913 her 2 children, with their nurse, were drowned in the Seine at Neuilly as the result of a motor accident; in 1921 she married the young Russian poet Serge Yessenin, whom she divorced 2 years later; and in 1927 she herself was strangled by her own scarf while motoring. Her memoirs, *My Life*, were pub. in 1927. See P. Magriel (ed.), *Isadora Duncan*, 1948.

Duncan, Robert Kennedy (1868-1914), Amer. chemist; b. Brantford, Ontario, Canada. Prof. of chem. at Washington and Jefferson College, 1901-6. From 1906 he was prof. of industrial chem. at the univ. of Kansas; and from 1910 director of industrial research—taking, at the same time, the same positions in Pittsburgh Univ. He discovered and patented a new process for manuf. phosphorus; a new low-melting glass; and processes for decorating glass. Initiated in 1907, at univ. of Kansas, a scheme of industrial fellowships, which has since grown to remarkable proportions there and at Pittsburgh. Pubs.: *The New Knowledge*, 1905; *The Chemistry of Commerce*, 1907; *Some Chemical Problems of To-day*, 1911.

Duncan, Ronald (1914-), poet and playwright, educ. in Switzerland and at Cambridge. His plays include *This Way to the Tomb*, 1945; *The Rape of Lucretia*, 1946; *The Eagle Has Two Heads*, 1946; *Stratton*, 1948; and *The Tipuwaite*, 1948. Among his other pubs. are: *The Dull Ass's Hoof*, 1941; *Postcards to Prunella*, 1942; *Journal of a Husbandman*, 1944; *Home Made Home*, 1947; *Jon's Journal*, 1948; *The Mongrel and Other Poems*, 1950; *The Blue Fox*, 1952; and *Where I Live*, 1953. He also ed. the *Songs and Satires* of the earl of Rochester and Pope's *Letters*.

Duncan, Thomas (1807-45), Scottish painter, b. Kinclaven, Perthshire. He studied at the Trustees' Academy, Edinburgh, and in 1830 was elected a member of the Royal Scottish Academy and in 1843 an associate of the Royal Academy, London. His prin. pictures represent scenes from Scottish hist., and illustrate Scottish life and character. Examples are to be seen in the National Gallery of Scotland.

Duncan de Cérissant, Mark (d. 1648), writer of Lat. verse. He entered the service of Sweden, and was Swedish ambas. to France in 1645, but renounced his position and his Protestantism and went to Rome. In 1647 he met the Duc de Guise, and accompanied him to Naples as secretary. He d. of a wound received in an engagement with the Spaniards while aiding Guise in his attempt to take Sicily from Spain. His fame as a Lat. versifier was great; the most celebrated of his poems being the *Carmen Gratulatorium*, on the marriage of Charles I of England and Henrietta Maria.

Duncan of Campdown, Adam, 1st Viscount (1731-1804), adm., b. Lundie, Angus, Scotland. He received his earliest education at Dundee, and in 1746 was placed under Capt. Haldane in the frigate *Shorcham*. Assisted in the attack on Goree, a Fr. settlement in W. Africa. In 1795 he hoisted his flag as commander-in-chief of the North Sea, and began harassing the Dutch. On 11 Oct. 1797 he gained a decisive victory over the Dutch, and in recognition of his services he was created Viscount D. of C. and Baron of Lundie, and was also granted a pension of £3000 to himself and the next 2 heirs to the title.

Duncansby Head, promontory (210 ft) forming the N.E. extremity of Caithness, Scotland, 18½ m. N. of Wick and 1½ E. of John o' Groat's house.

Duncker, Maximilian Wolfgang (1811-1886), Ger. historian, b. Berlin. In 1857 he became prof. of hist. at Tübingen, but was recalled to Berlin in 1859, becoming counsellor to the crown prince in 1861, and director of the state archives from 1867 to 1874. His place among Ger. historians rests chiefly on his *Geschichte des Alterthums*, 1852-7 (Eng. trans. by E. Abbott, 1877-82). Other pub. include: *Origines Germanicæ*, 1840; and *Die Krisis der Reformation*, 1845.

Dundalk (Gaelic *Dun Dealgán*), cap. of co. Louth, Rep. of Ireland, on the R. Castleton, near its entrance into D. Bay, 12 m. SW. of Newry. It is a railway centre for the Great N. railway, and there are important works belonging to the railway. There is also in normal times a weekly service of steamers to Liverpool. A considerable trade in dairy and agric. produce and live stock is carried on; there are also mills for flax-spinning, breweries, and distilleries. The fisheries are important, especially the salmon-fishing industry. Pop. 19,000.

Dundas, Sir David (1735-1820), gen. and writer on tactics, b. Edinburgh. He entered the army in 1752, and was aide-de-camp to Gen. Elliott in 1760-1 in the campaigns in Germany. Every year he was present at the manoeuvres of the Fr., Prussian, and Austrian armies, and in 1788 pub. the results of his observations of their tactics in *The Principles of Military Movements, chiefly applicable to Infantry. His Rules and Regulations for the Formation, Field Exercises, and Movements of His Majesty's Forces*, 1792, were pub. as the official orders for the army, and were followed by *Rules and Regulations for the Cavalry*, 1792. It was under these rules

and regulations that the battles of Moore and Wellington were fought. He was made governor of Chelsea Hospital in 1804, and commander-in-chief of the army 1809-11.

Dundas, Henry, 1st Viscount Melville (1742-1811), politician, educ. at Edinburgh Univ. At the age of 24 he was appointed solicitor-general for Scotland. In 1774 he became a member of parliament, and in the next year was made lord-advocate. He vigorously opposed any concession being made to the Amer. colonies while they were in arms against the mother country, and in 1778 he supported a motion for the repeal of the Massachusetts charter. Later he was home secretary in Pitt's administration, and in 1794 secretary for war, with Wm Windham as secretary-at-war. He was in 1802 created Viscount Melville, and 2 years later returned to office with Pitt as first lord of the admiralty. Charged with malversation in 1806, he was impeached, but acquitted on all charges, and his name, which had been struck off the roll of privy councillors, was restored. See life by C. Matheson, 1933.

Dundas, tn of Wentworth co., Ontario, Canada, at the head of Burlington Bay, Lake Ontario. It has large mills worked by water, and manufs. leather, paper, flour, machinery, tools, and textiles. Pop. 8295.

Dundas Castle, mansion in Dalmeny par., W. Lothian, Scotland, built on a low ridge called D. Hill about 1½ m. SSW. of South Queensferry. The estate was held by a family of Dundas from about 1124 until 1875, and D. C. sustained a siege in 1449. It now belongs to Sir Stewart Stewart-Clark, Bart. The castle was partly rebuilt by James Dundas of D. (1793-1881), and with its thick walls and vaulted chambers is one of the finest and best preserved baronial fortalices in Scotland.

Dundee, John Graham of Claverhouse, Viscount (c. 1649-89), soldier. He served as a volunteer in the Fr. army and in the Dutch army under the Prince of Orange, where he obtained a cornetcy in 1674 for saving the life of the prince at the battle of Seneffe. In 1677 he returned to England and obtained a captaincy in the regiment of the marquis of Montrose, charged with enforcing the penal laws against the Scottish Covenanters. Graham's attempt to disperse an armed force of Covenanters at Drumclog ended in his defeat, and was the signal for a serious and general rising. He was more successful at Bothwell Bridge (1679), and afterwards made a tour through the SW. cos. in search of rebels, routing a company at Aird's Moss and killing the leader, Cameron. In 1682-4 he suppressed the Covenanters of Dumfries, Annandale, Kirkcudbright, Ayr, and Lanark with the severity enjoined by the gov., killing, robbing, and starving them when they would not submit. In 1688 he was appointed 2nd in command of the Scottish army, and was ordered S. with his forces to protect the Stuart throne and oppose the landing of William of Orange. In the same year

James II created him Viscount Dundee. After James II's flight to France D. returned to Scotland and was indefatigable in supporting the Stuart cause. In July 1689 he organised the Highlands against the new regime and defeated the gov. forces under Hugh Mackay (q.v.) at Killiecrankie, where D. himself was mortally wounded. See M. Napier, *Memorials and Letters of Graham of Claverhouse*, 1859-62; and lives by M.

underwent much improvement in the course of the last cent. It possesses many fine buildings, among which are the City Square buildings, and the Albert Institute, designed by Sir Gilbert Scott. Other important edifices are the Royal Exchange, St. Paul's Church, Univ. College (St. Andrew's Univ.), Caird Hall, and the Technical Institute. There are sev. fine parks, chief of which are Camperdown Park of approximately 150 ac.; the



Dundee Courier and Advertiser

DUNDEE FROM THE LAW

Morris, 1888; C. S. Terry, 1905; I. MacLaren, 1908; G. Daviot, 1937; and A. S. H. Taylor, 1939.

Dundee, city, a royal parl. and municipal burgh and seaport in the co. of Angus, Scotland, situated on the N. shore of the Firth of Tay. It was once strongly fortified. On account of the prominent part taken by its citizens in forwarding the work of the Reformation, it is often given the title of 'The Scottish Geneva.' On 28 Dec. 1879 part of the Tay Bridge (which connects D. with Fifeshire) and the train passing over it were blown into the riv., with the loss of over 70 lives. The tn, which is Scotland's 4th largest city, stands on a gentle slope, rising from the water's edge to the hill known as the Law (571 ft.). The estuary opposite the tn is nearly 2 m. wide, and its shipping is important enough to make D. the 2nd port of Scotland. The tn is well built, and

Baxter Park; and Balcay Park on the hill of Balcay. The chief industry of Dundee consists in the manuf. of lute and heavy linen fabrics such as sailcloth. There are also manufs. of cordage, fine linen, confectionery, marmalade, cash registers and accounting machines, watches, plastics, etc. Some shipbuilding is carried on, and mill-wright work, and there are marine and other engineering works: steam boilers, engines, and textile machinery, etc., are manufactured. There are also extensive sawmills. D. is the chief centre of the lute trade. The tn of Bronghty Ferry is included in the burgh of D. Pop. 177,333 (1951). See J. Thomson (continued by J. MacLaren), *The History of Dundee*, 1874; A. Maxwell, *Old Dundee: ecclesiastical, burghal and social, prior to the Reformation*, 1891; A. C. Lamb, *Dundee, its quaint and historic buildings*, 1895; Brit. Association,

A Scientific Survey of Dundee and District, 1939; Bonnie Dundee and Round About, 1953.

Dundonald, Earls of, see COCHRANE, DOUGLAS and THOMAS.

Dundonald, tn in the par. of D., Ayrshire, Scotland. D. Castle, erected in the 12th cent., where Robert II., the 1st Stewart sovereign, d. in 1390, and Old Auchans Castle are ruins. Pop. 1600.

Dundrennan, vil. of Kirkcudbrightshire, Scotland, 5 m. S.E. of Kirkcudbright, with

them along the ground, sometimes with a movement as smooth as flowing liquid, and sometimes with a skipping motion. A D. has a gentle windward slope and a steep leeward descent; the rolling grains being driven up a gentle incline and falling steeply into the hollow below. Moving sands are in many places altering the surface of the land; the continuous blowing of a steady wind in one direction frequently covering fertile tracts with this arid deposit, moving at the rate of from



High Commissioner for New Zealand

DUNEDIN: THE OCTAGON, WITH ST PAUL'S ANGLICAN CATHEDRAL AND THE TOWN HALL

the ruins of an anct Cistercian abbey (1142). Pop. 100.

Dundrum, vil. 6 m. S. of Dublin. Rep. of Ireland, on the road to the Wicklow Mts.

Dune, mound or ridge of loose sand heaped up by the wind on the seashore or occasionally on the shore of an inland lake and on the banks of a riv. The name is also used for the wide stretches of sand in an inland dist. of low rainfall. Among the minerals which occur among sand deposits, quartz is by far the most common and of the longest duration, as it is comparatively hard, has practically no cleavage, is insoluble in water, and does not readily decompose, while the other grains decompose comparatively rapidly. In general, the sand grains which form the D.s are rounded, owing to mutual attrition during transport; the greater the distance travelled the smoother and rounder the grains. The wind which heaps up the D.s seldom carries even the smallest grains in suspension, but rolls

60 to 70 ft in one year. The average height of coastal sand D.s is from 200 to 300 ft, but in the crescent-shaped sand D.s of the Sahara they sometimes rise to a height of 600 ft in a wide belt of sand called 'Igidi' or 'Gidi,' from the Berber word for D.s, and are separated by depressions, sometimes below sea-level, called 'Juf.' Little can be done to arrest the progress of moving sand D.s, but they can be fixed to a certain extent by planting *Carex arenaria*, and similar plants with long creeping roots. Particular attention is given to this form of conservation in the Netherlands, because at some points on the Dutch coast the sand D.s form the only protection for inland dists. against the sea, which is often at a higher level than the land. See E. R. Matthews, *Coast Erosion and Protection*, 1934; H. A. Ragnold, *The Physics of Blown Sand and Desert Dunes*, 1941; J. A. Steers, *The Coastline of England and Wales*, 1946.

Dunedin, cap. of the dist. of Otago, is the fourth largest city in New Zealand,

situated at the head of Otago harbour 15 m. from the sea. The harbour is accessible to vessels drawing 25 ft right up to Dunedin, while Port Chalmers, 9 m. N.E. by rail, handles the shipping drawing over 25 ft up to 30 ft 6 in. Spread over 7 hills, D. has a beautiful setting, and has preserved much of the native forest in laying out the Town Belt and public gardens. D., founded by Scots and given the anc name of the Scottish cap., is regarded as the most Scottish city outside Scotland. D. is an important education centre, the univ. of Otago catering for students of arts and science, medicine, law, dentistry, home science, physical education, commerce, and mining. In addition there are a teachers' training college and many secondary schools and colleges (public and private). The city has a number of fine buildings, notably the post office, tn hall, First Church, Knox Church, univ. of Otago, and the Otago Boys' High School. Local industry covers a wide field, for in and around Dunedin are found woollen mills and clothing factories, engineering works, agric. implement makers, gas and electric range factories, soap works, lime and cement works, a rope and twine factory, printing works, iron foundries, paper mills, aerated water and cordials manufacturing plants, fertilisers and allied products manufacturers, boot and shoe works, the only iron rolling mills in the Dominion, the manuf. of wax matches, tanning and fellmongering, sawmilling, ink-making, production of hardware and woodware for building purposes, canning and preserving works, butter and cheese making, wax paper manuf., basket manufacturing, flour mills, and a linseed oil factory. Shipbuilding, one of the oldest industries, is now being revived, together with its associated trades, such as the overhauling and repairing of ships. 1948 marked D.'s centenary and many important events were held to celebrate the occasion. Pop. 99,326. See illustration.

Dunedin and Stenton, Andrew Graham Murray, 1st Viscount and Baron (1849-1942), lawyer and statesman, b. Edinburgh, son of Thomas Graham Murray, of Stenton, Fordie, and Locholly, Perthshire, writer to the signet and sheriff of Aberdeen. Educ. at Harrow and Trinity College, Cambridge. He was called to the Scottish Bar in 1874; sheriff of Perthshire, 1890-1; lord-advocate of Scotland, 1896-1903; secretary for Scotland, 1903-5; lord justice general and lord president of the court of session, Scotland, 1905-13; raised to the peerage in 1905; viscount, 1926.

Dunfermline, Sir Alexander Seton, 1st Earl of (c. 1555-1622), statesman. He studied at the Jesuit College, Rome, but gave up this proposed admittance to the priesthood, and studied law in France, being called to the Scottish Bar in 1577. He helped to arrange the union between England and Scotland. He was created earl of D. in 1608.

Dunfermline (Gaelic, the fort on the crooked linn), city of Fifeshire, Scotland,

on the Firth of Forth, 16 m. NW. of Edinburgh. The fine Norman nave, which is all the Reformers spared in their assault on the abbey (1560), now forms the vestibule of the New Abbey Church. Malcolm Canmore and Margaret, who were married in D. (1070), were buried in the abbey, which for over 2 centuries afterwards was the recognised place of royal sepulture. The tomb of King Robert Bruce is in the New Abbey Church. D.'s greatest benefactor was Andrew Carnegie, who presented the tn with Pittencrieff Park and Glen, and a free library, besides an ann. income of £25,000. Since 1718 the tn has been busily engaged in the linen industry, especially in the manuf. of damasks, and it now manufs. a wide range of textiles. Rosyth Royal Naval dockyard (q.v.) is in the city, and there are rich coal deposits. Pop. 46,000.

Dungannon, tn of co. Tyrone, N. Ireland, 13 m. S. of Cookstown. It was the home of the O'Neills, kings of Ulster. There are manufs. of linen goods, glass fabrics, earthenware firebricks, and tiles, also a trade in corn and flax. There is a large cattle and pig market. Pop. 5700.

Dungarvan, urb. dist. and seaport tn of co. Waterford, Rep. of Ireland. It is situated on the bay of D. There are fisheries, a leather industry, manufs. of glue and gelatine, and a trade in dairy and agric. produce. The legend runs that the tn was spared by Cromwell because a woman drank his health at the gateway. Pop. 5400.

Dungeness, small low headland on the S. coast of Kent, England, 10½ m. SE. of Rye, with a lighthouse, coastguard station, and a small fort. Lloyd's signalling station is near.

Dungeon, or **Donjon** (Late Lat. *dominionem*, from *dominus*, a lord), the prin. tower or keep (q.v.) of a Norman castle. The modern use of the word 'dungeon' for a prison is derived from the position of the Norman prison in the ground storey of the 'donjon'.

Dungiven, mrkt tn in the co. of Londonderry, N. Ireland. Near it are the remains of an Augustinian priory founded in 1100. The quartz crystals known as D. diamonds are found nearby. D. is surrounded by mt, glen, and riv. scenery of impressive grandeur. Pop. 950.

Dunglas, promontory on the R. Clyde, Scotland, 2½ m. ESE. of Dumbarton. It is a rocky headland, supposed to have been the site of a Rom. station, and the end of the Antonine Wall. It has ruins of the castle of the Colquhouns of Luss, and a monument to Henry Bell (1767-1830), the pioneer of steam navigation in Britain.

Dunholme, see DURHAM.

Dunkeld, tn of Perthshire, Scotland, on the N. bank of the R. Tay, 15½ m. by rail from Perth. A bridge of 7 arches (which was opened in 1808) here spans the riv. The tn is said to have derived its name from a Culdee church, founded in 815 by Constantin, king of the Picts. Opposite D. is Little D., famed for its waterfalls. The cathedral, founded 1107, once the seat of the Scottish primates, contains a

recumbent figure, in armour, of the Wolf of Badenoch. The most celebrated bishop was Gavin Douglas, translator of Virgil. The choir is still used as the par. church. Pop. 1000.

Dunkerley, William Arthur, see OXENHAM, JOHN.

Dunkers, Dunkards, Tankers, or Dippers, familiar names for the Ger. Baptist Brethren, now known as the Church of the Brethren (see BRETHREN, CHURCH OF THE).

Dunkery Beacon, hill in Somerset, England, 1700 ft high, the highest point on Exmoor. Owned by the National Trust.

Dunkirk (Fr. Dunkerque; Flem. Duinkerke), most northerly seaport of France, in the dept of Nord, at the entrance to the Strait of Dover (q.v.). It is a naval, mercantile, and fishing port, and stands at the junction of 4 canals, which give it communication with the whole of E. France. The tn, Flem. in appearance, suffered severely in both world wars—in particular during the Second World War. The most notable of the old buildings of the tn which are still in existence are the fine 15th-cent. belfry, 190 ft high, which is said to contain the most beautiful carillon in France, and the church of St Eloi, parts of which date back to 1590. On the Place Jean-Bart, the centre of the tn, stands a statue of Jean Bart (q.v.), who was a native of D. There are boat-building, steel, textile, oil, soap, and food-stuff industries. Seaborne trade is largely with ports of NW. Europe, and there are ferry and other connections with England. The fisheries (cod from Iceland, and herring) are important. D. is said to owe its foundation to a church built by St Eloi in the 7th cent. in the dunes here; hence its name 'Church of the Dunes.' It was sacked by the Eng. in 1388. In 1658 it was taken by Cromwell, but was sold to Louis XIV by Charles II in 1662 for 5 million francs. Louis fortified the harbour, and D. became of great strategic importance. In 1793 it was vainly besieged by the Eng. During the First World War D. became a base for Brit. aircraft, mainly to deal with Ger. air raids on England. The base was estab. in 1914, and expanded with the needs of the war. After the latter part of 1915 the D. station was also used as a base for offensive raids against the Germans; working in close co-operation with the aircraft on the W. Front, it achieved notable successes, both in fighting and in bombing. Although it was one of their objectives, the Germans never reached D., having been brought to a standstill at Nieuport, 20 m. E. The words 'ville héroïque sert d'exemple à toute la nation' were added to the arms of the tn in 1917. During the Second World War D. achieved fame by the successful evacuation of the Brit. Army from its beaches in 1940, after the ill-fated campaign on the W. Front in that year. The Brit. forces, together with some allied contingents, began to withdraw to the Fr. coast on 29 May. Some 220 Brit. naval vessels and more than 660 others, mostly small boats, took part in the transportation of the troops from D. to England. By 3 June the evacuation of

over 337,000 Brit. and allied troops had been completed for the loss of 6 destroyers and 24 minor war vessels. All the military transport and about 1000 guns were also lost. After the end of the war, on 4 Mar. 1947, an Anglo-Fr. Treaty of Alliance, to subsist for 50 years, was signed at D. by Mr Ernest Bevin (q.v.) and M. Bidault. A war memorial was unveiled at D. by Queen Elizabeth the Queen Mother in July 1957. Pop. 17,000. See EUROPE—HISTORY DURING THE SECOND WORLD WAR; and WESTERN FRONT IN SECOND WORLD WAR. And see E. K. Chatterton, *The Epic of Dunkirk*, 1940; J. Masefield, *The Nine Days' Wonder*, 1941. 2. City of Chautauque co., New York, U.S.A., on Lake Erie, 38 m. SW. of Buffalo by rail. It has a good harbour, fisheries, and manufs. machinery, motors, agric. implements and other iron goods, silk, tool steel, and glass. Pop. 18,000.

Dunleer, vil. of co. Louth, Rep. of Ireland, 9 m. N. of Drogheda.

Dunlin, see DUN.

Dunlop, John Boyd (1840–1921), re-inventor of the pneumatic tyre, which was first patented by one Thompson in 1846. B. Dregghorn, Ayrshire, Scotland. Went to Belfast 1867, and while working as a veterinary surgeon devised the D. tyre, 1888. He sold out to Harvey du Cros in 1889, removed to Dublin in 1892, and kept a drapery estab. at Ball's Bridge, where he d. See DUNLOP RUBBER COMPANY LIMITED.

Dunlop, par. of Ayrshire, Scotland, 8 m. NNW. of Kilmarnock, which gave its name to a popular cheese. Pop. 1256.

Dunlop Rubber Company Limited commemorates in its present name, which it adopted in 1901, the invention by John Boyd D. (q.v.) in 1888 of the 1st practicable pneumatic tyre. The original company was founded in Dublin in 1889 under the name of the Pneumatic Tyre and Hoofths Cycle Agency Limited. In its early days the company concentrated exclusively on the manuf. of cycle tyres, but it soon extended its activities to include the manuf. of car tyres. By 1900 D. tyres were being manufactured in France, Germany, Canada, New Zealand, and Australia. The company continued to expand steadily. In 1908 a start was made on the manuf. of rims and wheels, and in 1910 the first D. rubber plantations in Malaya were acquired. In 1915 the company founded its own cotton mills for the manuf. of tyre cord. In 1916 the giant tyre factory of Fort D. was built at Erdington, Birmingham. The 2 world wars resulted in still further expansion. A number of other rubber companies joined the D. Group, which to-day manufs. not only tyres of all kinds and sizes, but belting, hose, sports goods, rubber footwear, clothing, Dunlopillo, motor and cycle accessories, aeroplane accessories, engineering components, and a variety of floor-covering materials. It has throughout the world 94 factories and 100,000 employees. The authorised cap. is £40,000,000.

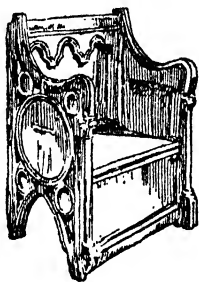
Dunluce, Earl of, see ANTRIM, MARQUESS OF.

Dunmanway, mkt tn 16 m. W. of Bandon, in co. Cork, Rep. of Ireland. Pop. 1600.

Dunmore: 1. Vil. and watering place of co. Waterford, Rep. of Ireland, on Waterford harbour and 10 m. S.E. of Waterford. Pop. 800 (summer).

2. Banking post-bor. in Lackawanna co., Pennsylvania, U.S.A., on the Erie and Lackawanna railroads, adjoining Scranton. The tn was incorporated in 1862. It is an important centre for anthracite coal, iron, and bricks, and has flourishing silk industries. Pop. 20,305.

Dunmow: 1. *Great Dunmow*. Small mkt tn in Essex, England, on the R. Chelmer, 13 m. N. of Chelmsford. It is



THE DUNMOW FITCH CHAIR IN WHICH CLAIMANTS SAT

thought to be the site of the Rom. station of Caesariomagnus. The fine par. church, of the 13th-15th cents., contains a curious gallery in the S. aisle. The tn hall was built in 1578 and enlarged in 1855. There is a bacon factory. Pop. 3629.

2. *Little Dunmow*, two m. E. of Great D., owes its importance to a priory of Austin canons, founded 1106. The par. church consists of the S. aisle of the chancel of the cruciform priory church, the foundations of which have been partially excavated. The D. Fitch of Bacon was instituted in 1244 by Robert de Fitzwalter as a prize to any married couple who 'will go to the priory, and kneeling on two sharp pointed stones, will swear that they have not quarrelled nor repented of their marriage within a year and a day after its celebration.' The first recorded award was made in 1445, and successful claimants still continue to come forward, although the award was not made during the Second World War. See W. Andrews, *History of the Dunmow Fitch*, 1877; J. W. Robertson-Scott, *The Strange Story of the Dunmow Fitch*, 1909. Pop. 430.

Dunmurry, vil. of co. Antrim, N. Ireland, on the Glenwater, 4½ m. S. by W. of Belfast. It has linen manufs. Pop. 4000.

Dunn, Samuel (d. 1794), Eng. mathematician. He is chiefly noted as the inventor of the 'universal planispheres or

terrestrial and celestial globes in plano.' Author of *The New Atlas of the Mundane System*, 1774; and *The Navigator's Guide to the Oriental or Indian Seas*, 1775.

Dunnage, name given to the loose logs of wood that are placed between the cargo in the hold of a ship to keep it steady.

Dunne, Finley Peter (1867-1936), Amer. humorist, b. Chicago. He became a newspaper reporter in 1885; city editor of the *Chicago Times*, 1891-2; was on the staff of the *Chicago Evening Post* and *Times Herald*, 1892-7; and was editor of the *Chicago Journal*, 1897-1900. He is well known as the creator of 'Mr Dooley,' the incomparable Irish-Amer. philosopher of Archey Road. The sayings of this character on social and political questions first appeared in the *Chicago Journal*, and were collected in 1898 under the title of *Mr Dooley in Peace and in War*. This was followed by *Mr Dooley in the Hearts of his Countrymen*, 1898; *Mr Dooley's Philosophy*, 1900; *Mr Dooley's Opinions*, 1901; *Observations by Mr Dooley*, 1902; *Dissertations by Mr Dooley*, 1906; and *Mr Dooley Says*, 1910. See E. Killis, *Mr Dooley's America*, 1941.

Dunne, John William (1875-1949), Brit. philosopher, served in the Yeomanry during the Boer War. Later he made a number of aeronautical experiments. As a result of studying the problems of existence he propounded the philosophical theory of serialism, which he worked out in a number of books, *An Experiment with Time*, 1927; *The Serial Universe*, 1934; *The New Immortality*, 1938; and *Nothing Dies*, 1940.

Dunnet Head, most N. point on the mainland of Great Britain. It is a rocky peninsula in Caithness, Scotland, 346 ft high, with a lighthouse on its summit, and the small fishing vil. of D. on the S.W. of the bay.

Dunnose, rocky headland on S.E. coast of the Isle of Wight, England.

Dunnville, banking vil. and port of entry in Haldimand co., Ontario, Canada; on the Grand R. and the Grand Trunk Railway, 40 m. S.S.E. of Hamilton. It is an important agric. dist. and the tn has lumber interests. Pop. 4803.

Dunois, Jean, Comte de (c. 1403-68), Fr. soldier, commonly known as the 'Bastard of Orléans,' being the natural son of Louis, duke of Orléans (brother of Charles VI), and Marie of Enguien. He fought at Beaugé (1421) and Verneuil (1424), and defeated the Eng. at Montargis (1427). He held Orléans till the arrival of Joan of Arc in 1429, and with her won the battle of Patay. He laid siege to Chartres and Lagny in 1432, and drove the Eng. from Paris in 1436, and later from Normandy and many cities in Guienne. He joined the league of rebellious nobles in 1464, and, as a result, Louis temporarily deprived him of his estates.

Dunois, Fr. dist., part of Beauce (q.v.). Its prin. tn is Châteaudun (q.v.).

Dunolly, mining tn in Victoria, Australia, 126 m. N.W. of Melbourne, with knitting mills and wheat storage plant.

Dunoon, burgh and popular watering-place of Argyll, Scotland, on the Firth of

Clyde, 7½ m. W. of Greenock. There are ruins of a castle, formerly the seat of the Stewarts. It was the site of hanging of 36 Lamonts by the Campbells in 1643. There is a monument to Robert Burns's Highland Mary, who was born in D. The tn is pleasant and well built, with a steamboat pier and esplanade, and is the scene of the ann. Cowal highland games. Pop. 9940.

Dunraven and Mount Earl, Windham Thomas Wyndham-Quin, 4th Earl of (1841-1926), Eng. politician, b. Adare Abbey. In 1902 he was chairman of the Irish Land Conference, and became president of the Irish Reform Association. He strongly advocated the policy known as 'devolution,' which was denounced by the gov., with the result that the chief secretary of Ireland, Mr Wyndham, resigned from office in 1905. D. was a keen yachtsman, and twice tried, without success, for the America Cup, in 1893 and 1895. His pubs. include: *The Irish Question*, 1889; *Self-Instruction in the Theory and Practice of Navigation*, 1900; *The Crisis in Ireland: Federal Union through Devolution*, 1920; and *Past Times and Pastimes*, 1922.

Dunrossness, peninsula in the extreme S. of the is. of Mainland, Shetland, Scotland, which terminates in Sumburgh Head. The par. includes Fair Is. Pop. 2700.

Duns, police bor. and co. tn of Berwickshire, Scotland, 15 m. W. of Berwick-on-Tweed, set in impressive Border scenery. Duns Scotus and Thomas Boston were natives. In 1639 Gen. Leslie, with his army of Covenanters, encamped on D. Law, a high mound rising some 700 ft. Formerly the spelling was Dunse. Pop. 2030.

Duns Scotus, Johannes (1265 or 1274-1308), medieval philosopher. His bp. is uncertain, Duns in Berwickshire, Dunstane in Northumberland, and Dunum (Down) in N. Ireland all claiming that honour. He became a Franciscan and studied and lectured (about 1301) at Oxford. In 1304 he moved to Paris, and 3 years later the doctor's degree was conferred upon him by the univ., and he was appointed regent of the theological school. In 1308 he was despatched to Cologne to found a univ. and d. there a few months after his arrival. D. S. acquired the title 'Doctor Subtilis' on account of his dialectical ingenuity and wit. In philosophy he revived nominalism in a mitigated form and denied the real distinction between essence and existence. In theology he strongly upheld the doctrine of the Immaculate Conception. He taught that no one could attain to a pure knowledge of theology by reason alone, that revelation must form part of that knowledge. During the Revival of Learning the Scotists, we are told, 'ragged in every pulpit,' and thus 'Dunsmen' gave the word 'dunce,' meaning a dullard, or ignoramus. Scotus wrote commentaries on the Bible and on Aristotle, and the *Sentences* of Peter Lombard, called *Opus Ozontense*, or *Anglicanum*. A complete ed. of his works was pub. in 13 vols. by

Luke Wadding at Lyons, 1639; reprinted (Paris), 26 vols., 1891-5. This ed., however, is uncritical and contains works that are undoubtedly spurious. Vols. I and II of a new ed. by C. Balic were pub. in 1951. See E. Longpré, *La Philosophie du B. Duns Scot*, 1924; E. Gilson, *Jean Duns Scot*, 1952.

Dunsany, Edward John Moreton Drax Plunkett, 18th Baron (1878-1957), poet and playwright, b. London. Educ. at Eton and Sandhurst, he succeeded to the title on his father's death in 1899. During the Boer War he served with the Coldstream Guards, and in the First World War was a capt. in the Inniskilling Fusiliers. In the Second World War he held the Chair of Eng. Literature at Athens. His first book was a novel, *The Gods of Pegana*, 1905; other novels are *Time and the Gods*, 1906; *The King of Elfland's Daughter*, 1924; and *The Wise Woman*, 1933. In 1909, on Yeats's invitation, he wrote a play, *The Glittering Gair*, for the Abbey Theatre, and followed it with many others, including *The Golden Doom*, 1912; *A Night at an Inn*, 1916; *The Laughter of the Gods*, 1919; *The Tents of the Arabs*, 1920; *If*, 1921; *Alexander*, 1925; *Mr Faithful*, 1927; *The Old Folk of the Centuries*, 1930; *Lord Adrian*, 1933; and *Plays for Farth and Air*, 1937. These plays are intellectual dreams; they deal in mythology, but it is a mythology of the author's own. He also pub. 2 vols. of verse, *Fifty Poems*, 1930, and *Mirage Water*, 1939; and a series of autobiographical works, *Patches of Sunlight*, 1938; *While the Sirens Slept*, 1944; *The Sirens Wake*, 1945; and *To Awaken Pegasus*, 1949.

Dunscore, vil. of Dumfriesshire, Scotland, 10 m. NW. of Dumfries, and noted for the fact that Burns and Carlyle once lived there. Pop. 1600.

Dunsinane, one of the Sidlaw Hills in Perthshire, Scotland. It has an elevation of 1012 ft. and is situated 8½ m. N.W. of Perth. On its summit are the remains of 'Macbeth's Castle,' where Siward, earl of Northumbria, is supposed to have defeated Macbeth in 1054. See Shakespeare's *Macbeth*, IV, I.

Dunsink, hill 4 m. NW. of Dublin, on which is the observatory of Trinity College.

Dunstable, John (?-1453), composer, astrologer, and mathematician. He seems to have been a canon of Hereford Cathedral and prebendary of Putson Minor in the same diocese for about 20 years from 1419, but these posts probably did not require continuous residence, for he was much abroad in the service of the duke of Bedford and already one of the most famous composers of his time on the Continent, as is shown by a Fr. poem written in 1437. He influenced Dufay, the other great musician of the period. He was 'modern' for his time, even in church music, the only part of his output that has survived, the secular song 'O rosa bella' being probably wrongly ascribed to him. A collected ed. of his work appears in *Musica Britannica*.

Dunstable, in 36½ m. NW. of London, in the S. of Beds. It is connected by

branches with 2 main railway lines. Since the 18th cent. it has been chiefly engaged in the manuf. of straw hats and now has also considerable printing works, and manufs. of sparking plugs. Very large sums of money are being invested in the motor industry. D. is linked with hist., because its Augustinian priory, founded by Henry I in the early 12th cent., was the scene of the first miracle play performed in England; because Cranmer here annulled Catherine of Aragon's marriage (1533); and because until 1643 it possessed an Eleanor Cross. The church of St Peter and St Paul is a remnant of the old priory. On the nearby D. Downs is the London Zoological Society's Whipsnade zoo, and the H.Q. of the London Gliding Club. Pop. 8900.

Dunstaffnage, ruined castle in Argyll, Scotland, on Loch Etive, 2½ m. NNE. of Oban. According to tradition it was the royal seat of the Dalriadian kings, and the Stone of Destiny was held here before its removal to Scone. D. was captured by Robert Bruce in 1308, and became the stronghold of the Campbells and Macdonalds. It formed an Eng. military station during the risings of 1715 and 1745, and for a while was the prison of Flora Macdonald in 1746. The duke of Argyll is the hereditary keeper of the castle, and Campbell of D. is the hereditary capt.

Dunstan, Saint (c. 910-88), archbishop and statesman, b. at or near Glastonbury, in Somerset, of noble parents. After receiving a careful education he was taken by his uncle, Aldhelm, to Athelstan's court. He did not remain there, however, but retired to a hermitage near Glastonbury, where he devoted himself to a life of prayer and austerity. In 943, on the accession of Edmund, D. was called from his retirement and made abbot of Glastonbury, where he rebuilt and restored the abbey. The next king, Edred, gave D. almost unlimited power, and the prelate used this to reform the Benedictine order in England and strictly enforce eccles. discipline. For a time D. lost his influence, but it was soon regained, and in 961 he was made archbishop of Canterbury. He maintained almost absolute power during the reigns of Edgar and Edmund, but his credit and influence declined after the murder of the latter prince. He retired to Canterbury, where he d. His feast is on 19 May.

Dunstanburgh Castle is situated on the Northumbrian coast, England, 8 m. NE. of Alnwick. The cliffs are basaltic in structure, and the quartz crystals found in the neighbourhood are called D. diamonds.

Dunster, picturesque mkt. tn. in Somerset, England, 23 m. NW. of Taunton, with an anct castle and yarn market. Pop. 1200.

Dunsterville, Major-General **Lionel Charles** (1865-1946), soldier, who entered the Royal Sussex Regiment in 1884, reaching rank of maj.-gen. in 1918. He transferred to the Indian Staff Corps in 1887, and held various important staff appointments. Served in the Waziristan, 1894-5, NW. Frontier (India), 1897-8,

China, 1900, and First World War campaigns. Commanded Dunster Force, expedition to Baku, which was detached from Mesopotamian Expeditionary Force from Jan. to Sept. 1918. D. was Kipling's original of 'Stalky.' He wrote *Adventures of Dunster Force*, 1920; *Stalky's Reminiscences*, 1928; *More Yarns*, 1931; and *Stalky Settles Down*, 1932.

Duntocher, tn. of Dunbartonshire, Scotland, 8 m. NW. of Glasgow, manufacturing farm tools. Pop. 3000.

Duntun, John (1650-1733), bookseller, b. Grafton, W. Sussex, who had a business at the Sign of the Raven, near the Royal Exchange, London. He pub. a number of political pamphlets and squibs on the Whig side, and an interesting autobiography, *The Life and Errors of John Duntun*, 1705, ed. with a memoir by J. Nichols, 1818.

Dunwich, par. and vil. of E. Suffolk, England, situated on the coast, 4½ m. SW. of Southwold. Formerly the cap. of E. Anglia, a thriving seaport, with a bishop's seat and a king's palace, D. is now merely a small watering-place. A bishopric was estab. here about 630 by Sigebert, who built a royal palace for himself and a church for the new bishop, Felix. But the sea gradually encroached on the tn, and in the reign of Edward III destroyed 400 houses. There are remains of a 13th-cent. Franciscan priory, and the ruins of a 12th-cent. chapel near the present church. D. sent 2 members to parliament from 1296 to 1832; the corporation was not abolished until 1886, and by 1920 there were less than 200 inhabs. Pop. 150.

Duodecimals, system of arithmetical notation where the local value of a digit increases by powers of 12 as it moves to the left, instead of by powers of 10 as in the ordinary or decimal notation. Two extra symbols are required, one to denote 10 and one to denote 11. The advantage of such a system, if universally adopted, arises from the fact that 12 splits up into the small factors 2.2.3. This method of notation was used by the Babylonians and other anct peoples, and remains to-day in measures of quantity, i.e. dozen (12), gross (12 × 12 = 144); in the divs. of the clock; Eng. currency (12d. = 1s.), etc. *D. arithmetic*, as practised by surveyors, is a system by which the calculation of square measure and cubic measure is reduced to operations in the powers of 12. The table for square measure is 12 sq. in. = 1 superficial prime; 12 superficial primes = 1 sq. ft. That for cubic measures is 12 cub. in. = 1 solid second; 12 solid seconds = 1 solid prime; 12 solid primes = 1 cub. ft.

Duodenal Ulcer, see ULCER.

Duodenum, see DIGESTION and INTES-TINES.

Duparloup, **Félix Antoine Philibert** (1802-78), bishop of Orléans, b. St Félix, near Chambéry, Savoy. Ordained a priest in 1825, he became a vicar of the Madeleine, Paris, and for a time tutor to the Orléans princes. Later he founded the famous academy at St Hyacinthe. In 1849 D. was appointed bishop of Orléans. He was one of the most energetic and

influential Fr. bishops of his day. Though a staunch defender of the temporal power of the popes, at the Vatican council he was a leader among those who opposed the definition of the doctrine of infallibility. His educational doctrines had a far-reaching influence, and he wrote many books on the subject to propagate his theories. Among these are: *Méthode générale du catéchisme*, 1841; *De l'Éducation*, 1850; *De la Haute Éducation intellectuelle*, 1855; and *L'Enfant*, 1869. D. was a leader of the moderate Catholics, and his writings on eccles. and religious subjects include *La Souveraineté pontificale*, 1860; *Le Mariage chrétien*, 1869; and *Histoire de Notre Seigneur Jésus Christ*, 1870. The *Journal intime de Mgr. Dupanloup* was ed. by Branchereau in 1902. See lives by F. Lagrange (Eng. trans. by Lady Herbert, 1885); E. Faguet, 1914.

Duparc, Henri (1848-1933), Fr. composer, b. Paris. He was educ. by the Jesuits at the Collège de Vaugirard, where he learned pianoforte from César Franck, and afterwards took private lessons in composition from the same master. His few works include a symphonic poem, *Lénore*, and a nocturne, *Aux Étoiles*, but he is chiefly remembered for 16 songs, among them 'Invitation au voyage' and 'Phydilé.' He was a fierce critic of his own work and destroyed a number of compositions. He retired to Switzerland, suffering from neurasthenia, and d. almost 50 years after his last pub. composition.

Duperrey, Louis Isidore (1786-1865), Fr. navigator, b. Paris. He accompanied Freycinet on his voyage of exploration in the N. Pacific (1817-20), and on his return to France he was given the command of the *Coquille*. In 1822-5 he explored parts of Australia and New Guinea, and on his return pub. *Voyage autour du monde*, 1826-30.

Dupin, André Marie Jean Jacques (1783-1865), Fr. statesman and jurist, b. Varzy, Nièvre. In 1811 he was appointed to serve on the commission charged with codification of the laws of the empire, and in 1815 he sat for a few months in the chamber of deputies on the side of the Liberal opposition. He was made *procureur-général* after the revolution of 1830. He was president of the chamber 8 times between the years 1832 and 1848, resigning in 1848 on failing to secure the crown for the young count of Paris. The emperor restored him to his former office in 1857. His many works include *Libertés de l'Eglise Gallicane*, 1824, which was placed on the Index.

Dupleix, Joseph François, Marquis de (1697-1763), governor-general of Fr. India, b. Landrecies, Nord, France. In 1715 he went to India in the service of the Fr. E. India Company and in 1720 was elected a member of the council at Pondichéry. In 1742 he was appointed governor-general of Fr. India. When war broke out between France and England in 1744, D. strove to obtain the ascendancy of France in India by making overtures to the Indian princes. He laid

siege to Fort St David (1747), and spread his troops over the Carnatic. He attempted the subjugation of the S. of India, and at one time was proclaimed its viceroy by the inhab. His plans were, however, defeated by Clive, and he was summarily recalled by the Fr. Gov. in 1754, and was never rewarded for the undoubted service he rendered to his country. See Tibulle Hamont, *Dupleix, d'après sa correspondance inédite*, 1881; H. Castounet, *Dupleix, ses expéditions et ses projets*, 1888; G. B. Malleson, *Dupleix* (in the *Rulers of India* series), 1890; and the lives by E. Guérin, 1908, and J. Bid-dulph, 1910.

Duplex Querela (Lat. 'twofold complaint'), process in eccles. causes, consisting of an appeal from an authority to one above it, as from a bishop to an archbishop, and from an archbishop to the sovereign in council.

Duplicate Ratio, the proportion or R. which the squares of any numbers bear in relation to that of the radical quantities. If 3 quantities be continued proportionals, the R. of the 1st to the 3rd will be a D. R. of the R. of the 1st and 2nd. Thus if 3 : 12 :: 12 : 48, then 3 : 48 :: 1 : 16, which is the D. R. of 3 : 12.

Dupnizza, see MAREK.

Dupont, Pierre (1821-70), Fr. poet, b. Lyons, son of a blacksmith, but being left an orphan at the age of 5, he was brought up by the village priest. In 1839 he went to Paris, and 3 years later his poem *Les deux anges* received a prize from the Academy. His best-known songs, many of which he set to music himself, are: 'La Chanson de blé,' 'La Vache blanche,' and 'Le Braconnier.' They were collected under *Chants et chansons*, 1852-4, and *Chants et poésies* (7th ed. 1862). See C. Lenient, *Poésie patriotique en France*, 1889.

Dupont de Nemours, Pierre Samuel (1739-1817), Fr. economist and statesman, b. Paris, negotiated with the Eng. commissioner the recognition of the independence of the U.S.A. Went to U.S.A. in 1799, where he was employed by Jefferson. His family settled in U.S.A., where they estab. themselves at Powder Mill in Delaware, in the production of gun-powder. The business grew, and by 1903 the descendants of D. de N. controlled 100 companies; in 1915 E. J. Du Pont de Nemours & Co. was founded in Delaware and became a leading Amer. chemical firm with many and varied interests, among them the production of nylon and artificial fibres.

Düppel, Denmark, see ДУППОЛ.

Dupré, Giovanni (1817-1869), Tuscan sculptor, of humble Fr. origin, b. Sionna. As a boy he was put to hard manual toil, but was early fortunate in obtaining the help of the Rom. priesthood, who gave him the means of studying sculpture. Some busts of cardinals shown in Rome made a sensation. These were followed by the figures of 'Abel and Cain,' a work which was shown at the Paris Salon in 1855. Among his best works were the 'Triumph of the Cross' and the bust of Mme Dora D'Istria. He d. in poverty. See life by H. S. Frieze, 1888.

Dupré, Jules (1811-89), Fr. painter, *b.* Nantes. He was the son of a porcelain manufacturer, and worked first in his father's and later in his uncle's china factory. D. belonged to the romantic school of landscape painters, and painted nature best in her tempestuous moods. On his visit to England in 1831 he learnt much from Constable's pictures; he was also influenced by Théodore Rousseau. D.'s best-known works are: 'The Forest of Fontainebleau,' 'Morning and Evening,' His 'Crossing the Bridge' is in the Wallace Collection, London. See life by J. Claretie, 1879.

Dupré, Marcel (1886-), Fr. organ-virtuoso and composer, and one of the greatest improvisators. Organist at Notre-Dame, Paris, and he became director of the Conservatoire in 1954.

Dupuy de Lôme, Stanislas Charles Henri Laurent (1816-85), Fr. naval architect, *b.* Plœmeur, near L'Orient. He studied at the École Polytechnique and in England. He designed the first Fr. war steamer, the *Napoléon* (1848-52), and invented methods of changing sailing men-of-war into steamers. During the siege of Paris he planned a steering balloon, but the siege was over before it was put to any use. He was appointed inspecteur-général du Matériel de la Marine in 1866, was elected a member of the Academy of Sciences in 1866, and a senator for life in 1877.

Dupuytren, Guillaume, Baron (1777-1835), Fr. surgeon, *b.* Pierre-Buffière, Haute Vienne; struggled with poverty until, in 1801, he received a coveted anatomical appointment in Paris. His connection with the Hôtel-Dieu dates from 1808, and in 1815 he became chief surgeon. He was an indefatigable student, especially of morbid anatomy, enjoying a high reputation for the skill with which he performed a number of difficult operations, and as a teacher. His *Leçons Orales de Clinique Chirurgicale*, 4 vols., 1832-4, includes all his important clinics at the Hôtel-Dieu. He *d.* a millionaire. Biography by L. Delhoume, 1935.

Duquesne, Abraham, Marquis (1610-1688), Fr. adm., *b.* Dieppe. He first joined the merchant service, and took part in the defeat of the Spaniards at the capture of the Lerins Is. (1637). He also fought at Guetaria (1638), Coruña (1639), Tarragona (1641), and Barcelona (1643). In 1676 he defeated the combined fleets of Spain and Holland off Stromboli, for which victory he was made a marquis by Louis XIV. He also bombarded Algiers (1682-3) and Genoa (1684), and did much service to his country by reorganising the Fr. fleet. See A. Jal, *Abraham Duquesne et la marine de son temps*, 1873.

Duquesne, city of Allegheny co., Pennsylvania, U.S.A., 10 m. SE. of Pittsburgh, on the Monongahela R., and on the Pennsylvania Railroad. It has steel works and blast furnaces. Pop. 17,620.

Duquesne, Fort, Fr. fort and trading-post built in 1754 on the site where Pittsburgh now stands. The Brit. expedition against it under Braddock was repulsed in 1755, but in 1758 Gen. Forbes captured

it from the Fr., and in the following year began the building of Pittsburgh and Fort Pitt, in honour of Wm Pitt, the prime minister of Britain.

Duquesnoy, François (1594-1644), a Flem. sculptor, of Brussels, commonly known as François Flamand or (It.) Il Fiamingo. He chiefly excelled in modelling children. He executed groups of children for the high altar at St Peter's, Rome; a 'Concert of Cherubim' in the church of the Holy Apostles, Naples; 'St Susanna,' in the Loretto church at Rome; and 'St Andrew,' in the basilica of St Peter's.

Duralumin, trade name applied to alloy of aluminium (94 per cent), containing also copper (approximately 4 per cent), manganese, magnesium, and silicon. It was invented in 1906 by Wilson, and for many years was the strongest of light aluminium alloys, having the then peculiar property of hardening spontaneously after a special heating process. But since then (c. 1925) various other alloys having similar properties have been developed. In its strongest state D. is as good as mild steel, but not so ductile and only one-third of its weight. It resists atmospheric corrosion but requires protection against sea water. The term is sometimes used to include the class of wrought aluminium-copper-magnesium alloys of the age-hardenable type. See ALLOY.

Duramen, in botany, is the heartwood or older internal portion of the secondary wood, as distinguished from the outer sap-wood (*alburnum*).

Durance, riv. of SE. France, which rises in the dept of Hautes-Alpes, and flows SW. past Briançon in a series of gorges. In its lower reaches it is much canalised for irrigation purposes, and its course becomes NW. It finally enters the Rhône 3 m. below Arvignon (q.v.). Its chief trib. is the Verdon. Length 225 m.

Durand, Charles Auguste Emile, see CAROLUS-DURAND.

Durango: 1. Mountainous state of N. Mexico, 47,691 sq. m. in area, with a pop. of 629,900. The rugged peaks of the Sierra Madre cross the W., where grizzly bears, wolves, deer, and wild turkeys are found. Cotton is also indigenous. The Toltecs believed that the god of the air had taught them its use, and it is still one of the great staples of D. Corn, tobacco, fruits, and sugar cane are also produced, and cattle- and sheep-breeding are carried on. Cerro de Mercado, just outside D. city, is an iron mt., nearly 1 m. in length. There are also rich gold, silver, and copper mines.

2. Cap. of D. state, c. 500 m. from Mexico City on the Central Highway, and some 6200 ft above sea-level. It enjoys a matchless climate and is a resort as well as an industrial centre, at the junction of 2 of the main routes crossing the country. It has an 18th-cent. cathedral, palace of the state gov., and mint. The industries are metallurgy, especially iron and steel, cotton, and processing of stock and agric. products. The children's health-play-ground is famous. Pop. 23,400.

3. Sp. tn in the prov. of Vizcaya, on the D. riv. Pop. 10,000.

Duránis, or **Durránis**, the dominant race of Afghans, comprising the Zirak and the Panjpai. They inhabit the N. slopes of the Safed Koh.

Durant, **William James** (1885-), Amer. philosopher, b. North Adams, Massachusetts. Educ. at St Peter's College, Jersey City, and Columbia Univ., he became Prof. of Philosophy at the univ. of California. After the success of his book *The Story of Philosophy*, 1926, he wrote *The Case for India*, 1930; *The Tragedy of Russia*, 1933; and a vast work *The Story of Civilisation*, which appeared in successive vols.—*Our Oriental Heritage*, 1935; *The Life of Greece*, 1939; *Caesar and Christ*, 1944; and *The Age of Faith*, 1950.

Durant, city in Bryan co., Oklahoma, U.S.A., 19 m. NE. of Denison. It is an agric. centre, and has cotton and cottonseed oil industries. It is the seat of the Southeastern State College and Oklahoma Presbyterian College for women. The tn received a charter in 1904. Pop. 10,541.

Durante, **Ser**, poet of Tuscany, b. in the early part of the 13th cent. He wrote an adaptation of the *Roman de la Rose* in 233 sonnets called *Il Fiore* (ed. Mazzatini, 1888).

Durazno: 1. Dept. of Uruguay, crossed by the Cuchilla Grande del D. Vast numbers of sheep and cattle are pastured in the dist. Area 5525 sq. m.; pop. 100,000.

2. Cap. of D. dept., on the Yi R., a road and railway junction, 105 m. N. of Montevideo, with dairying, flour milling, and meat-packing industries. Pop. 27,000.

Durazzo (Albanian **Durrës**) (ancient **Epidamnus** and **Dyrrachium**), port on the bay of D., 60 m. S. of Sentari (Shkodër), in Albania. The main industries are ship-building, bricks, milling, and tobacco. Epidamnus was founded in the 7th cent. BC by settlers from Corinth and Corcyra. The Romans, who seized it early in the 4th cent. BC, called it **Ithyrrachium**. It was a favourite harbour at which to embark Rom. troops sailing eastward, and it was here that Pompey gained a short-lived triumph over Caesar, before his defeat at Pharsalus (48 BC). It was destroyed by an earthquake in AD 345, and was besieged and taken in 481, 1082, and 1185. D. belonged to Venice from 1392 to 1501, and then to the Turks until 1913. From it the retreating Serbs were shipped to safety in 1915 by Fr. vessels. During the It. invasion of Albania, 1939, It. troops landed at D. Pop. 41,000.

Durban, port and 3rd largest city in S. Africa, the commercial centre of Natal prov., lies in a landlocked tidal bay and ranks among the greatest ports of the world. The enclosed harbour has an area of 6 sq. m. and 6 m. of quays. The average depth of water alongside the commercial wharves is 30–36 ft. but some have a depth of 40–42 ft. There are graving docks, a floating dock, and a grain elevator (42,000 tons capacity) at Congella wharf. The pre-cooling store holds 1800 tons of citrus and deciduous fruit. The port is equipped with electrically driven

appliances capable of loading 2100 tons of coal per hr. There is a whaling station and 2 factories for processing in the bay. In addition to D.'s importance as a port there is considerable industry in the city and environs, including the manuf. of soap, paint, matches, textiles, clothing, rope, paper, chemicals, enamel ware, furniture, tyres, glass and plastics. There are also sugar retheries, important engineering works, and large railway workshops. It is a popular seaside resort boasting of a climate during the winter months similar to the Fr. Riviera. The beautiful surrounding country adds to its attraction as a holiday resort. All varieties of sub-tropical fruits grow here. Civic buildings rank with any in the S. hemisphere. D. was founded in 1824 by Lieut. F. G. Farewell, who secured a cession of land from the Zulu chief, Chaka. In 1835 it was named D. in honour of Sir Benjamin D'Urban, the then governor of the Cape. Ambitious plans exist for future development. The city's airport is at Reunion (8 m. S.), where there are daily services to main tns in South Africa. Pop.: Whites, 177,000; Bantu, 196,500; Asiatics, 214,400; Coloured, 24,900.

Durbar (from Persian *darbar*, meaning 'court' or 'audience'), the executive council of a prov. or state of India and formerly used in this sense by Indian rulers, who discussed state administration and other business in D. During Brit. rule the word was most commonly applied to such ceremonial gatherings or festivals as Lord Lytton held at Delhi in 1877, for the purpose of proclaiming Queen Victoria Empress of India. Delhi was the scene of similar state functions in 1903 and 1912, when Edward VII and George V were proclaimed emperor.

Düren, Ger. tn in the *Land* of N. Rhine-Westphalia (q.v.), on the Roer, 32 m. SSW. of Düsseldorf (q.v.). It dates from the times of the Carolingians (q.v.). During the Second World War, in the early months of 1945, it became the centre of most bitter fighting for the Roer R. The Americans occupied half the tn on 24 Feb. and the remainder some days later. When it was finally taken the greater part of the tn was in ruins (see WESTERN FRONT IN THE SECOND WORLD WAR). Since the end of the war there has been a great deal of reconstruction work. Metal goods, textiles, paper, and glass are manuf. Pop. 35,000.

Dürer, **Albrecht** (Albert) (1471–1528), famous Ger. painter and engraver, b. Nuremberg, son of a goldsmith. A leader of the Ger. school of painting, he was also considered the inventor of the art of etching and of printing woodcuts in 2 colours. His copper-plate engravings are especially famous, and he ranks higher as a master of linear design than as a painter. In 1486 he became a pupil of the painter Michael Wöhlgenuth. From 1490 to 1494 he went on a tour, probably through Germany, visiting Strasburg, Colmar, Basel, and Venice, where Mantegna's works impressed him greatly. Water-colour landscapes, the product of his

journeys, are now greatly esteemed. On his return he married Agnes Frey, but their union is thought to have been an unhappy one. For a time he probably worked in Wohlgemuth's studio, but by 1497 had one of his own. D. went to Venice, 1505-7, where he painted 'The Martyrdom of St Bartholomew.' In 1512 he became court painter to Maximilian I, and painted for him 'The Virgin with many Angels.' He was deputy for Nuremberg at the Augsburg Diet, 1518, and painted Maximilian's portrait there. In 1521-2 D. and his wife visited the

those of Raphael, Melanchthon, Erasmus and himself. His drawings include such classics as the 'Hare' (Albertina), 1502, and magnificent portrait drawings (e.g. in the Brit. Museum). The series of engravings known as 'The Passion in Copper' was done between 1508 and 1513. All D.'s work is marked by a powerful imagination, impeccable craftsmanship, and also the enquiring spirit of the Renaissance, though it influences never submerged the Germanic character of his art. D. wrote on geometry and perspective, on mensuration (1525), on fortification (1527); *Vier Bücher über die Proportion* appearing in 1528. See Lady E. Eastlake, *Five Great Painters*, 1883; G. L. Schefer, *The Artist's Married Life*, 1848; D. Burekhardt, *Dürers Aufenthalt in Basel*, 1892; M. Zucker, *Albrecht Dürer*, 1900; H. Wölfflin, *Die Kunst Albrecht Dürers*, 1905; W. Waetzolot, *Dürer and his Times* (new ed.), 1955.

Duress (from Lat. *duritia*, harshness), a legal term for 'constraint.' It is open to a defendant to advance a plea of D. if he has been driven by menace (*per minus*) of death or bodily harm to commit some act which would normally constitute a crime or misdemeanour. The constraint may also consist of imprisonment.

D'Urfey, Thomas (1653-1723), poet and dramatist, b. Exeter, of Huguenot descent. A well-known man-about-town, he was a companion of Charles II and lived on into the reign of George I. He is best known by his collection of songs, *Pills to Purge Melancholy*, 1719-20. Addison describes him as 'a diverting companion' and 'a cheerful, honest, good-natured man.' His plays include: *The Siege of Memphis*, 1676; *Madame Fickle*, 1677; *The Virtuous Wife*, 1680; and *The Campaigners*, 1698. See C. L. Day, *The Songs of Thomas D'Urfey*, 1934.

Durga, or **Devi** (Sanskrit 'Inaccessible'), in Hindu mythology the daughter of Himavat (the Himalayas) and the wife of Siva. She is depicted with 10 armed hands, a kindly face, and attendant lions to suggest the ferocity of her nature. Bloody sacrifices are offered her, whilst her birthday, annually celebrated at the great festival of Durga-puja or Dussera ('ten days') in the 6th Hindu month, is especially important in Calcutta.

Durham, John George Lambton, Earl of (1792-1840), statesman, educ. at Eton, and afterwards served in the 10th Hussars. He entered parliament as a Whig in 1813. In 1828 he was raised to the peerage, taking the title of Baron D. In 1830 he became a member of the cabinet as Lord Privy Seal. The liberality and ultimate success of the Reform Bill are said to be chiefly due to him, his enthusiasm for reform gaining him the nickname of 'Radical Jack.' He went to Russia in 1835 as ambas., and remained there 2 years, after which he was sent to Canada as governor-general (1838). His immediate task was to inquire into the causes of unrest in the provs., but though he successfully quelled all discontent he remained in Canada only 5 months, resigning owing to criticism in England of



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ALBRECHT DÜRER

A self portrait at the age of 26

Netherlands and won the patronage of Charles V. He favoured the doctrines of the Reformation and was a friend of Luther. The mural decorations of Nuremberg city hall—'The Calumny of Apelles' and 'The Triumph of Maximilian'—were designed by D. Among his most famous engravings are: 'Adam and Eve', 1504; 'The Nativity', 'The Great Horse', and 'The Little Horse', 1505; 'Melancholia' and 'St Jerome in his Study', 1514; 'The Knight, Death, and the Devil', 1513; 'The Prodigal Son', 1503. Noted woodcuts are: 'The Apocalypse' (16 subjects, including the Revelation of St John), 1498; 'The Greater Passion' (12 subjects); 'The Lesser Passion' (37 subjects). Among his best pictures are: 'The Feast of the Rosary', 1506 (now in Strahow monastery, near Prague); 'Martyrdom of the 10,000 Christians', 1508 (Vienna Gallery); 'Adoration of the Magi', 1504 (Uffizi, Florence); 'Adam and Eve' (Florence), 'Adoration of the Trinity', 1511 (Imperial Gallery, Vienna); 'The Four Apostles', 1526 (Munich Gallery); 'Crucifixion', 1511. Among his portraits are

his lenience towards the ringleaders of the rebellion in Lower Canada. But his famous report, issued in 1839, led to the Union of Upper and Lower Canada and the institution of a common legislative assembly responsible to the executive council. See DURHAM REPORT. See life by S. J. Reid, 1906.

Durham: 1. Maritime co. of N.E. England, bounded on the N. by Northumberland, on the E. by the North Sea, on the S. by Yorks, and to the W. by Westmorland and Cumberland. In the W. are highlands belonging to the Pennines, rising to 2300 ft; this dist. is mostly barren moorland. Loamy fertile soil lies about the prin. rivs., the Tyne, Tees, and Wear. Sheep are pastured on the foothills of the Pennines. Coal-mining and shipbuilding are the chief industries; Sunderland, Jarrow, South Shields, Stockton-on-Tees, and West Hartlepool (qq.v.) are the prin. shipbuilding centres. Iron founding, steel production, chemical manuf. and engineering are also carried on. D. city (q.v.) is the co. tn. Part of the kingdom of Northumbria from the mid 6th to the early 9th cent., D. was a co. palatine until 1836. The co. returns 9 members to Parliament, and the 6 parl. bors. return 7 members. Area 1015 sq. m.; pop. 1,463,416.

2. Co. tn of D., England, 12 m. S. of Newcastle. Both the cathedral and the castle are magnificently situated on a tall rocky peninsula almost encircled by the R. Wear. In the year 995, Bishop Aldhun and his community of monks brought the incorrupt body of St Cuthbert hither from Chester-le-Street, guided, so legend relates, by a girl looking for her lost dun cow. The site was then called *Dunholme* (Hill Island). D. stood on the main line of Scottish invasions E. of the Pennines and so the community of St Cuthbert was deliberately developed into a powerful buffer between Scots and Eng. The bishops became important secular rulers, holding sway over a 'county palatine' and having many royal privileges. They had their own army which they often led in person. They also had their own courts, councils, and judges, of which traces remain in the D. Court of Chancery and the Halmote Court. The bishop's palatinate powers were reduced progressively down to the time of Wm van Mildert (1826-36), who is reckoned the last of the 'prince bishops.' The cathedral as it now stands was begun in 1092 by Bishop Wm of St Carleph. It is a stately building with its massive Norman nave, its late Norman Galilee chapel, its Early Eng. Chapel of the Nine Altars and its Perpendicular tower. It housed a Benedictine monastery in its precincts until 1540. Of the monastic buildings remaining, the most interesting is the dormitory, built about 1400 and with the original oak roof still intact. This room is now used as a library and museum and contains various anct MSS., the famous Conyers falchion, fragments of A.-S. crosses and other objects of interest. Leading from it is the 'loft,' in which are kept the Cuthbert relics, fragments of the

coffin made for the saint in 698, his own portable altar and pectoral cross, and the oldest needlework in England, in the shape of the stole and maniple presented to St Cuthbert's shrine by King Athelstan in 934. The cathedral occupies the S. side of Palaco (or Place) Green. This green, like the castle and most of the other buildings round it, now belongs to D. Univ. The building nearest the castle gate, now part of the univ. library, was once the exchequer built by Bishop Neville in 1450. Next door is the library built by Bishop Cosin in 1669 for the use



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THE NAVE OF DURHAM CATHEDRAL.

of the diocesan clergy. On the opposite side are the 17th-cent. almshouses, now univ. lecture-rooms, also Cosin's work. The most remarkable features of the castle are the Norman chapel and the Norman gallery and doorway, all dating back to 1072: the Great Hall, also a Norman foundation, though the present structure was erected by Bishop Hatfield in the early 14th cent.; the kitchens built in 1499 and still used; and the Black Staircase built by Cosin in 1665. The tn hall in the market place is modern (1851) and has some good modern stained glass. In the same building is the original guildhall where the city freemen held, and still hold, their meetings, for 8 of the 16 medieval freemen's guilds still survive. In the lobby are a portrait, a statue and some clothing of Joseph Boruwlaski, a Polish dwarf, 39 in. in height, who d. in Durham in 1837, at the age of 98. The mayor's chamber has 18th-cent. panelling and a fine Jacobean overmantel. Of the churches of D., the most remarkable are St Oswald's built in the 11th cent., but badly restored; St Margaret's, with considerable late Norman remains; St Giles at the top of Gilesgate, built in 1112; and

St Mary-le-Bow with 18th-cent. screen and wainscoting. The 2 main bridges, Framwelgate and Elvet, both date from the 12th cent. The buildings at the S.E. end of the latter show traces of the chapel of St Andrew which once stood there. Prebend's Bridge was put up in 1771. From it the visitor has one of the best views of the picturesque banks which form a beautiful setting for the cathedral and the canon's houses. The view from South Street which stands on the opposite bank must be among the finest of its kind in Europe. D. is rich in Georgian houses of which there are many in the N. and S. Baileys, in Old Elvet and in South Street. A number of them have fine staircases. Among the other interesting places is the café at No. 39 Silver Street, once the house of Sir John Duck, a 17th-cent. butcher's apprentice who made good; it has a particularly fine staircase. In the near neighbourhood are Kepler hospital, now a farm, founded in 1112 as a religious estab., and Sherburn Hospital, a 12th-cent. leper hospital; now, much altered, it is a combined hospital and almshouses. The site of the battle of Neville's Cross, where the Eng. defeated the Scots in 1346, is on the N. outskirts. The chief occupations are local gov., the distributive trades and coal-mining (though there are no pits in the immediate vicinity). The local trades include a carpet factory, 2 organ factories, and a sweet factory. Assizes and quarter sessions are held here. The chief educational estabs. include the univ. (q.v.), an old estab. public school for boys known as D. School, a high school for girls, 2 grammar schools and various others. Pop. 19,283. *Sec. G. Home, Durham Cathedral, 1935; G. H. Cook, Portrait of Durham Cathedral, 1948.*

3. Co. seat of D. co., North Carolina, U.S.A., 25 m. NW. of Raleigh. It has a great trade in tobacco and manufs. cigars and cigarettes, having one of the largest tobacco factories in the world. It also has large cotton and hosiery mills, and manufs. paper boxes, pharmaceuticals, and machinery; lumber and grain milling are also important. It is the seat of Duke Univ., the North Carolina College for Negroes, and Lincoln Hospital for Negroes. Pop. 71,311.

Durham, University of, founded 1832 by Bishop Van Mildert and the dean and chapter, and opened 1833. The College of Medicine and the College of Physical Science in Newcastle upon Tyne were associated with the univ. in 1851 and 1871 respectively; women were admitted to degrees from 1896. The univ. is now organised in 2 divs., viz. the Durham Colleges (8 colleges and 2 non-collegiate societies with a total of about 1200 students) and Newcastle (King's College, including the medical school, with about 3000 students). The faculties of arts, science, education, and music are common to both divisions; theology is taught in D. alone, and medicine, applied science, agriculture, law, and economic studies in Newcastle alone.

Durham, or Shorthorn, Breed, see CATTLE.

Durham Light Infantry, The, formerly 68th and 106th regiments, linked in 1881 to form the D. L. I. 68th formed in 1756 as 2nd Battalion, 23rd Regiment, but became 68th in 1758. Served mainly in France, West Indies, and Gibraltar, and joined Wellington's army in Peninsula in 1811. Later served in North America, Crimean War, and Maori War in New Zealand (1864). The 106th Regiment was raised in India by the East India Co. in 1826 as 2nd Bombay European Regiment. Served at Scinde and Aden and in 1857 in Persian Expedition, and during the Indian Mutiny. After the mutiny it was transferred to the Brit. estab. as 106th Regiment and came to Eng. in 1871. Fought in Egyptian campaign of 1884-5. The D. L. I. served in South African campaign of 1899-1902 and was in the Ladysmith relief column. During the First World War it raised some 37 battalions which served in France, Flanders, Italy, Macedonia, Egypt, on NW. Frontier of India, and at Archangel. The regiment also served in the Third Afghan War in 1919 against the ex-king Ammanullah (q.v.). The D. L. I. fought on the W. Front and in Burma in the Second World War. The 10th and 11th Battalions were part of the 49th Territorial Div. and, together with the Tyneside, Scottish, and various Yorks units, they distinguished themselves in the battle of Normandy, in the capture of Rauray and Bayeux. One battalion was part of the garrison troops on the Is. of Cos.

Durham Report, sequel to the rebellions in Canada of 1837-8. The rebellions failed because most Reformers, though bitterly opposed to 'Family Compact' rule (i.e. the rule of a small minority of wealthy and influential people), would not join an armed rising. But the Brit. Gov. nonetheless took prompt action by appointing the earl of D. (q.v.), one of England's foremost public figures, to be governor-general of Canada with the mission of preparing recommendations for reforming the gov. of the Canadas so as to end the strife which for years had torn them into warring factions. Baffling problems awaited him: the assemblies of Upper and Lower Canada had been suspended; numerous political prisoners filled the gaols; violence on the Amer. border threatened to flare up into actual warfare. D. spent 5 months in Canada, mostly in Quebec, and through his staff collected a great deal of information which he subsequently used in his R. On 28 June 1838 he freed all the political prisoners except a few, whom he banished to Bermuda; but in naming a particular place of exile he exceeded his powers, and when the Brit. Gov. weakly disallowed his order he resigned, to the great chagrin of the Canadian people, with whom he was popular.

Hloom and disappointment would have marked the close of his mission had it not been for the R., on the preparation of which he expended intense energy. Two months after his return it was completed and laid before parliament. It touched on all the provs., but paid most attention

to conditions in the two Canadas. To end the crisis there D. put forward 2 prin. recommendations: the union of Upper and Lower Canada, and the introduction of responsible gov. He favoured union because the separation of the provs. since 1791 had caused many disputes and had made impossible, for example, the completion of the St Lawrence canals. Moreover, he thought that conflict between France and England was the root of the trouble in Lower Canada and that union would resolve the difficulty by reducing the Fr. to a minority in the new gov. and assimilating them to the Eng. Canadians in language and laws. These views on the Fr.-Canadians are the least successful part of the D. R., though much of what D. remarked here was well founded, as for instance the Fr.-Canadians' lack of training in self-gov. But, as the future proved, the difficulties between the Fr. and Eng. Canadians could only be solved by developing co-operation and a sense of responsibility on both sides. The most important of the recommendations of the D. R. was responsible gov. on the model of the Brit. system of cabinet gov. adapted to colonial conditions. To avoid a clash between the executive council and the instructions sent to a governor, the R. proposed to limit the power of the colonial gov. to local affairs, in which the Brit. Gov. had no desire to interfere. Four matters were to be kept under control of the imperial gov.: foreign affairs, the regulation of trade, land grants, and the form of gov. The distinction, however, of first advocating responsible gov. belongs to Robert Baldwin of Upper Canada, who had been urging it for some years. Baldwin wrote to D. while he was in Canada and convinced the governor-general that responsible gov. would be effective. D.'s contribution, however, was equally essential; for by his R. he forced it on the attention of the Brit. Gov. and people and thereby ensured that it would be given a trial. His other recommendations, if less important, were essential to his aims: to train people in democratic gov. he advocated the estab. of local and municipal gov. and elected councils. He also recommended the extension of education because 'general education is necessary to the establishment of a strong popular government.' If the D. R. is not above criticism, its merits far outweigh its defects, and it is rightly regarded as one of the most important constitutional documents in the hist. of the Empire. For it upheld the ideal of colonial self-gov. as one to be cherished, not feared and suppressed. It pointed to the possibility of a strong Brit.-Amer. nation. To-day, for these reasons, the author of the R. is numbered among the founders of Canada. The R. was at once approved by the home gov., but responsible gov. was not achieved immediately. The Family Compact groups were most hostile to it and many people on both sides of the Atlantic thought it was merely a step in the disintegration of the Empire. Almost 10

years of political strife for Canadian Reformers passed before the nature of responsible gov. was understood and the necessity for its full and free acceptance recognised. See G. W. Brown, *Building the Canadian Nation*, 1942; Sir R. Coupland, *The Durham Report*, 1945.

Durio, genus of Bombacaceae, is indigenous to the Malay Archipelago. *D. zibethinus* is a large and lofty tree with smallish, alternate leaves, and yields the fruit known as durian. The durian is remarkable for the delicacy and richness of its flavour and the offensiveness of its odour, which has been compared with that of decaying onions.

Durius, see DUERO.

Dürkheim, Bad, Ger. spa in the Land of Rhineland-Palatinate (q.v.), 37 m. S. by W. of Mainz (q.v.). It has an arsenical spring, and is the centre of an important vine-growing dist. Pop. 11,000.

Durlach, Ger. tn in the Land of Baden-Württemberg (q.v.), an E. suburb of Karlsruhe (q.v.). It has a castle (now a museum) which was the seat of the margraves of Baden-D. from 1656 to 1715.

Dürnstein, or **Dürrenstein**, Austrian vil. in the prov. of Lower Austria, on the Danube, 4 m. W. of Krems. It has many ant. buildings and is overlooked by the ruins of a castle in which Richard I (q.v.) was imprisoned (1192-3). Pop. 600.

Durocortorum, see REIMS.

Durostorum, see SILISTRIA.

Durra, **Dhurra**, or **Doura** (Arabic *durah*), a native name of *Sorghum milgare* v. *durra*, an ann. plant grown in Africa, Asia, India, and warm countries for its large, almost globose grain; also known as Indian millet and Egyptian rice corn, and yellow milo and Jerusalem corn are forms of it. The name is also applied to the flour made from the grain, which makes an inferior bread to that of wheat. See SORGHUM.

Dürrenstein, see DÜRNSTEIN.

Durrës, see DURAZZO.

Dursley, tn of Gloucestershire, England, 15 m. S. of Gloucester. Once famous for cloth manufacturing which still flourishes at a mill in Cam, 1 m. N.; prin. industries are the manuf. of agric. implements, engines, pumps, and electric motors. The reformer Fox, bishop of Hereford, was born here in 1496. D. gives its name to a rural dist. Pop. (with environs) 9000.

Duruy, Jean Victor (1811-94), Fr. historian and politician, b. Paris, of working-class origin. From 1863 to 1869 he was minister of public instruction. During his 6 years in office he modernised the curricula of lycées and colleges, instituted secondary education for girls, and founded the 'conférences publiques.' His *Histoire des Romains* (Eng. trans.), 1883-6, is his most outstanding pub.

Duse, Eleonora (1858-1924), It. actress, b. Vigevano; only child of Alessandro Vincenzo D., a Venetian actor (the son of the actor, Luigi D.). She was on the stage from childhood, and toured continually. During her first season of success at Naples, with *Les Fourchambault* by Augier, she was deserted by her lover,

Martino Cafilero; and the boy to whom she gave birth at Turin lived for only a few days. In 1881, at Florence, she married Tebaldo Checchi, a fellow-actor. At the Carignano Theatre, Turin, she scored a success (immediately after a Bernhardt season) with *La Princesse de Bagdad* by Dumas fils. Later she returned with her husband to Turin, where a daughter was born. The company visited S. America; and at Rio de Janeiro she separated from her husband on account of her passion for Flavio Andô, a young actor who had joined them. Checchi soon afterwards d. in a consular post at Lisbon and left her a legacy. On return to Europe the company was disbanded, and she formed a new one, with Andô as its head. She began to tire of the old-fashioned Dumas plays, and came under the influence of Ibsen. She created the part of Santuzza in *Cavalleria Rusticana*. D. rivalled Bernhardt in Paris in 1897. After her relations with Andô had cooled, she was associated for 5 years with D'Annunzio (q.v.) in an attempt to revive classicism in the It. theatre. Many of his plays were written for her. She played such different rôles as Juliet, Francesca du Rimini, Marguerite, Camille, Fernande, Magda, Paula Tanqueray, and Ellida in Ibsen's *Lady from the Sea*. She would have nothing to do with make-up—relying on her natural liveliness of feature, voice, and gesture. She retired from the stage in 1909. Owing to war losses she returned to it in 1921, and repeated her triumphs in Italy, London, and America. She d. of influenza at Pittsburgh, Pennsylvania. See E. A. Rheinhardt, *Das Leben der Eleonora Duse*, 1930.

Dushambe, see STALINABAD.

Dusek, Jan Ladislav (1700–1812), Bohemian pianist and composer. He was an accomplished pianist at the age of 5 and an organist at 9. Was a choir boy at the convent of Jihlava, attended a Jesuit college, and afterwards took his degree in philosophy at the univ. of Prague. For some time he supported himself as organist, and having made a name at Amsterdam as a pianist of remarkable virtuosity and delicacy of touch, he became prof. of music to the stadtholder at The Hague. Whether he played in Berlin, St Petersburg, Milan, or London, D. invariably attracted large audiences. His attempt to found a music-publishing business in London was a complete failure, and he was obliged to take refuge from his creditors in Hamburg. In 1803 he became an intimate friend of Prince Louis Ferdinand of Prussia, himself a good musician and minor composer, who fell in battle in 1806. From 1807 till his death D. directed the concerts of Prince Talleyrand in Paris. But he undermined his constitution by drinking heavily, in a vain effort to rouse himself from the excessive languor to which his obesity had reduced him. He wrote many pianoforte concertos, much chamber music, and a large amount of piano music in which the instrument is used in a novel and congenial way. His 38 sonatas show many striking anticipations of later composers.

Düsseldorf, city of W. Germany, on the r. b. of the Rhine (q.v.), cap. of the *Land* of North Rhine-Westphalia (q.v.). It was made a city by the duke of Berg (q.v.) in 1288 (but one of D.'s churches dates back to the 8th cent., and there are still the remains of a palace of the emperor Frederick I. q.v.), and it became the cap. of the Duchy in 1385. In 1609 it passed to the Palatinate (q.v.), and in 1815 (after a short period under the duke of Berg, during the reorganisation of Germany by Napoleon I. q.v.) was incorporated into Prussia (q.v.). After the First World War it was occupied by the Fr., 1921–5. In the years before the Second World War it became the administrative cap. of the Ruhr (q.v.); most of the iron and steel, heavy engineering, and armaments plants of the Ruhr dist. had their head offices and administrative depts in the city. It suffered widespread devastation during the Second World War, and when it fell to the Allies in 1945 more than half of the city was in ruins (see below). The work of reconstruction was begun immediately after the war.

The fortifications of the city were destroyed by order of Napoleon at the beginning of the 19th cent., and converted into promenades. The city is now one of the best laid out in Germany, with fine squares and beautiful gardens. The prin. street is the Königsallee, a mile long, lined with offices, excellent shops, and restaurants. There are sev. ant. churches, including the Lambertikirche, which dates from the 13th cent. The old tn hall was begun in 1567, and there is a new tn hall, completed in 1953. Some of the modern industrial architecture of the city is very fine. D. has sev. museums and art collections, an artists' colony, and an academy of fine arts. It was the bp. of Heine, Peter von Cornelius, and Friedrich Jacobi (qq.v.); and among the residents of the city have been Goethe, Brahms, and Robert Schumann (qq.v.). The riv. harbour (4 basins) is busy, and there are iron, steel, machinery, textile, chemical, glass, and foodstuff industries. Pop. 633,500. During the Nazi regime (see GERMANY, *History*) the prin. industry of D. was the making of armaments, the largest war plant concerns being the Rheinmetall-Borsig Factory, making guns, shells and other armaments; the Mannesmann-Röhren Werke, making iron and steel tubes, submarine mine cases and the like; and the J. G. Schiewitzke Plant, making torpedoes and torpedo tubes. It was therefore an important target for Brit. bombers during the Second World War, especially from 1943 onwards. On 3 April 1945 the Germans blew up the 3 bridges of D. to save the city from capture, but it fell to the Allies soon afterwards. See WESTERN FRONT IN SECOND WORLD WAR.

Dust, small particles of earth, etc. which are moved by the slightest air-currents. Even in a room which has been kept spotlessly clean the existence of D. can be demonstrated when a strong beam of sunlight enters by a window. The D.

of the atmosphere consists of tiny fragments of minerals, organic matter, carbon, and ash from burning substances, volcanic D., salt from sea-spray, and D. formed by the disintegration of meteors on their way through the atmosphere. D. was formerly considered a nuisance without any redeeming qualities, but J. Aitken, in 1880, demonstrated that it combined with its disadvantages sev. useful functions. When air containing water vapour is cooled to the point of saturation, the water vapour does not condense at once unless there is some solid substance for it to condense upon. In suitable conditions some particles in the atmosphere can become nuclei or centres for the condensation of water. These minute globules form clouds, mists, and fogs, and on coalescing form drops of rain. Aitken devised an instrument for counting the nuclei in a known vol. of air. The results show that concentrations of nuclei are very variable, from 100 per c.c. in very clear air to about 100,000 per c.c. in the air of large cities. Many modifications of the sun's light are due to D. Without it we should have no twilight, no blue sky, no gorgeous sunsets, and none of the chiaroscuro effects which make scenery charming. On the other side of the account, D. presents to-day a most serious technical problem in many industries because of explosion risks and health hazards. In a certain mixture of air and suspended fine D. an explosion of great violence may occur in the presence of a spark or flame, and preventive measures must be taken, e.g. in flour-mills, saw-mills, and mines. More serious is the effect of D. on health: miners, particularly of anthracite, are susceptible to D. diseases, and other industries are not without their dangers. It is the cause of various skin diseases, and of bronchial ailments in the cotton industry, with attendant risks of poisoning.

Dusuns, tribe of N. Borneo (q.v.), numbering 117,867 out of the total native pop. of 243,009 (1951 census).

Dutch Antilles, see WEST INDIES.

Dutch Architecture, see BELGIAN AND DUTCH ARCHITECTURE.

Dutch Art. The phrase here mainly denotes the A. of the Netherlands from the end of the 16th cent. to about 1700. Much of the architecture and sculpture of the Low Countries was destroyed by Protestant vandalism in the 2nd half of the 16th cent., but see BELGIAN AND DUTCH ARCHITECTURE.

It is, however, the work of Dutch painters which must be considered among the glories of European civilisation; and throughout that work 2 themes predominate, Dutch home life and republican freedom. In the late 16th and early 17th cents. D. A. was influenced by It. Renaissance and baroque art. Thus Cornelisz (1562-1638) (q.v.) tried to reproduce the style of Raphael, but without marked success. His 'Bacchus and Ceres' at Dresden and 'Prodigal Son' at Budapest exemplify the effect of seduction in the guise of classical myth and moralistic art respectively. Abraham Bloemaert (c.

1564-1651) (q.v.) painted in the baroque style. He owed something to Titian, as may be seen in his 'Shepherdess with Grapes' at Karlsruhe. His pupil Gerard van Honthorst (1590-1656) (q.v.) painted portraits of royal personages and other celebrated individuals. 'Those of Queen Elizabeth of Bohemia and George Villiers, 1st duke of Buckingham, are in the National Portrait Gallery. He is, however, more esteemed for powerful effects of lighting in which he anticipates Rembrandt. Jan van Goyen (1596-1656) (q.v.) was one of the founders of a school of painters specialising in picturesque naturalistic landscape. Among his most celebrated pupils was Nicholas Berchem (1624-83) whose 'Old Port of Genoa,' 'Jupiter with Nymphs on Ida,' and 'Musical Shepherdess' are in the Wallace Collection. Mention must be made of a distinct group of painters famous for their studies of lower and middle class life, emphasising particularly its gay and carefree aspect. Among them were Dirk Hals (c. 1589-1656) (q.v.), Adriaen Brouwer (1605-38) (q.v.), Flem. painter of tavern scenes who worked in Holland, Adriaen van Ostade (1610-85) (q.v.) whose 'Alchemist' is in the National Gallery, and (to-day very highly esteemed) Jan Steen (1626-79) (q.v.) his pupil Jan Molenaer (c. 1610-68), a pupil of Frans Hals. Besides tavern groups he painted scenes from wealthy bourgeois life, and his significance in the latter genre lies in the fact that such works as 'The Family Feast' at Amsterdam and 'Musical Pastime' in the National Gallery were forerunners of the D. *tableaux de modes* which were later developed by Gabriel Metsu (1630-67) (q.v.) and Gerard Ter Borch (or Terborgh) (1617-81) (q.v.). The latter was a prolific artist who expended minute exactness upon details of dress and furniture. In portraiture he reveals the influence of Velázquez. The National Gallery possesses a splendid example of his work in 'The Peace of Munster' (see NETHERLANDS, History). Yet another group of painters is remarkable for what has been called 'Architectural Art.' Handsome interiors are the features of such pictures as 'Young Woman in a 'Court-yard' and 'Peepshow Cabinet' (both in the National Gallery) by Samuel van Hoogstraten (1627-78). Pieter de Hooch (c. 1632-c. 1681) (q.v.) shows affinities with Vermeer. His quiet court yards and interiors full of reflected light in which figures are beautifully placed are splendid in tone and design. See, e.g., his 'Interior of a Dutch House,' National Gallery.

Three names in D. A. tower above all others: Hals, Rembrandt, and Vermeer. Frans Hals (1580-1666) (q.v.) is one of the greatest portrait painters of all time, and as a colourist he had no superior in his age. He shows little trace of foreign influence and specialised in studies of laughing children and types of Haarlem low life. His most important works are the portrait groups of the Haarlem Civic Guards, and his 'Laughing Cavalier' in the Wallace

Collection is justly one of the most celebrated pictures in the world.

Rembrandt Harmensz van Rijn or Ryn (1606-69) (q.v.) stands as one of the great geniuses of the race. From the first he was an etcher of the highest skill and closely studied the It. masters in such originals as he could buy. Rembrandt has been called the artist of old age, and indeed his incomparable 'Head of an

and 'Lady Standing at the Virginals' (National Gallery). A masterpiece is the 'View of Delft' (The Hague). Vermeer was almost forgotten for 2 centuries, but to-day his exquisite colour, lighting, and placing are justly appraised.

The D. achievement in landscape (with Seghers, van Goyen, Cuyp, Koninck, Ruysdael, and Hobbema) is also great. In flower, still-life, and animal painting,



W. F. Mansell

VERMEER'S 'LADY STANDING AT THE VIRGINALS'
National Gallery, London

Old Woman,' in the National Gallery, is among the finest works in that collection. In portraiture, subject painting, landscape, in his depth of light and shade, and his superb drawings and prints he is one of the world's greatest masters.

Jan Vermeer, van der Meer, or Jan van Delft (1632-75) (q.v.) in his earlier period was influenced by the school of Rembrandt, but he later developed a more personal style, characterised by a delicate subtlety and harmony of treatment, and less bold colouring. To the first period belong 'Christ with Martha and Mary' (National Gallery of Scotland), and 'Woman and Soldier' (Dresden). Among later works are 'The Coquette' (Brunswick), 'Lady at a Casement' (New York),

in architectural and seaport subjects, there is a great number of minor masters. In the 19th cent. there was a fresh expression in painting, with Josef Israels (1824-1911), J. B. Jongkind (1819-91), and the brothers Maris and Vincent van Gogh (1853-90). In modern art D.A. has its place with the group De Stijl, equally interested in new architecture, design, and painting. Piet Mondrian (1872-1944) is at the present time widely esteemed as an abstract painter.

Magnificent examples of D. A. are to be found in all the prin. galleries of Europe and America; but the supreme collection is housed in the Rijksmuseum at Amsterdam. (See also individual names.) See G. H. Marius, *Dutch Painting in the*

Nineteenth Century, 1908; W. Bode, *Great Masters of Dutch and Flemish Painting*, 1909; E. Fromentin, *Masters of Past Time* (trans.), 1912; R. H. Wilenski, *Introduction to Dutch Art*, 1927.

Dutch Art Museums. The Netherlands schools of painting have pride of place in the Rijksmuseum, Amsterdam (built in the late 19th cent.). The nucleus of the collection consisted of pictures belonging to the House of Orange. Other and later accessions were the collections of Adriaen van der Hoop and Baron van der Poll acquired in 1880 and collections from the various guild houses. All the Dutch masters are represented here in abundance, although many of their works are found in the galleries of other countries. It is generally held that Rembrandt's somewhat misnamed 'Night Watch' is the *pièce de résistance*. It was painted in 1642 and is the master's largest picture. Other favourite Rembrandts here are 'The Syndics'—a group of D. merchants in conference—and 'The Jewish Bride.' There are sev. of the choicest paintings of Vermeer, among them his very popular 'The Letter' and 'The Little Street.' A series of rooms is designed to show the change and development of D. culture. The Kröller-Müller Museum devoted to Van Gogh, and Rembrandt's house in Amsterdam, now converted into a museum, should also be mentioned.

The Mauritshuis at The Hague dates from the 1630's when it was the residence of Count John Maurice of Nassau, but the building only became a gallery in 1821 when it was used to house the remainder of various collections of the princes of Orange which had survived the vicissitudes of war. Here again, as at Amsterdam, the outstanding work is by Rembrandt, namely his sombre and dignified 'The School of Anatomy'; and hardly less famous are his 'Susannah Bathing,' 'Simeon in the Temple'—a miracle of composition and light—and 'David Playing the Harp before Saul.' Yet equally popular are Jan Vermeer's 'View of Delft' and 'Head of a Young Girl' and Paul Potter's 'Bull'—large in scope and treatment. Other well-known pictures here are the genre study, 'Young Housekeeper,' by Gerard Dou, a pupil of Rembrandt, and a view of Haarlem by Jacob Ruisdael. 'The Oyster Feast' by Jan Steen, and also a number of pictures by Ostade, Ter Borch, Wouwerman, and others.

Among the few non-D. works are portraits of Isabella Brant and Hélène Fourment by Rubens and works by Holbein, Van Dyck, and Velázquez. Here may be mentioned the Haarlem Museum Gallery, which is largely a Frans Hals memorial, but also contains some portrait groups by Ter Borch, and paintings by Van der Helst and Brouwer. The Boymans Museum, Rotterdam, is another fine collection of the national arts, containing works of both old and modern masters.

Dutch Auction, an A. in which the article to be sold is first put up at the

maximum price. If there is no offer, the price is then lowered by stages until a bid is made.

Dutch East India Company, founded by charter from the Netherlands States-General, 1602, to regulate D. trade in the Indian Ocean, and to assist in the war of independence against Spain and Portugal. As well as having a monopoly of trade between the Straits of Magellan and the Cape of Good Hope, it was empowered to maintain armed forces, erect forts and factories, wage wars and enter into treaties in the name of the States-General, to coin money, and to wield full administrative, judicial, and legislative authority over the area of its operations. H.Q. were estab. at Batavia in 1619, and by the mid 17th cent. the C. had almost completely monopolised trade in the Indian Ocean, with govts. at Amboyna, Banda, Ceylon, Java, Macassar, Malacca, and Ternate, and a colony at the Cape of Good Hope. The expense of maintaining the trade monopoly against Brit. and Fr. competition gradually weakened the C. and it was dissolved in 1798, at the time of the conquest of Holland by the Fr. revolutionary armies. See P. Valentyn, *Beschryving van en en nieuw oost Indien*, Amsterdam, 1724.

Dutch East Indies, or Netherlands Indies, name formerly given to Asiatic possessions of the Netherlands, now all in Indonesia (q.v.). See G. T. Raynal, *Histoire philosophique et politique des établissements et du commerce des européens dans les deux Indes*, 1780; D. J. H. Nyessen, *The Races of Java*, 1929; E. S. de Klerck, *History of the Netherlands East Indies*, 1938; J. W. Nystrom, *Surinam*, 1942; A. Hyma, *The Dutch in the Far East*, 1942; H. J. van Mook, *The Netherlands East Indies and Japan*, 1944; J. S. Furnival, *Colonial Policy and Practice: a Comparative Study of Burma and Netherlands India*, 1948; D. Wehl, *The Birth of Indonesia*, 1948.

Dutch Guiana, see NETHERLANDS GUIANA.

Dutch Literature. During the late middle ages literary activity was concentrated almost entirely in the Flem. part of the country. Its spread was fostered by the growth of national feeling at the time of the Reformation and the newly-won independence. The most brilliant writer of this period, generally called 'de gouden eeuw' (the golden century), was J. van den Vondel (q.v.) (1587-1679), an outstanding poet, whose successful tragedies are still performed. Important contemporaries are the popular allegorist and moralist Jacob Cats (q.v.) (1577-1660); the more satiric humanist C. Huygens (1596-1687); P. C. Hooft (q.v.) (1581-1647), the author of beautiful lyrics, and an important hist. of the Netherlands; and G. A. Bredero (1585-1618) who excelled in witty comedies and farces. This rich classical period of D. L. ended in the last decades of the 17th cent. J. Luyken (1649-1712), a melancholic mystic, may be considered to be the last important poet of the 'golden century.' In the 18th

cent. L. declined, being mostly imitative of Fr. models, but a major exception is W. Langendijk (1683-1756), writer of numerous good farcical comedies. The first decades of the 19th cent. witnessed the rise of romanticism. Willem Bilderdijk (q.v.) (1756-1831), A. C. W. Staring (q.v.) (1747-1840), and H. Tollens (1780-1856) are the most characteristic figures of this transitional period. Da Costa (q.v.) (1798-1860) trans. Fr. and Eng. romantic poets and introduced them to D. readers. The romantic movement in Holland was encouraged by a literary periodical *De Gids* (*The Guide*), ed. by Bakhuizen van den Brink (1810-65), and E. J. Potgieter (1808-75). The latter was a successful poet and novelist as well as a critic, and greatly influenced the growth of a national L. van Lennep (q.v.) (1802-68) first trans. Walter Scott into D. and wrote some remarkable historical novels, while important contemporary novelists were Limburg Brouwer (1795-1847), Anna Bosboom-Toussaint (q.v.) (1812-86), and Alberdingk Thijm (1820-89). At this time a group of brilliant writers, including especially N. Beets (q.v.) (1814-1903) and P. Hasebroek (1812-96), were founding their work on Eng. models, but revealed their native originality in their observation of D. life. In 1860 the *Nederlandsche Spectator* appeared, a weekly review associated especially with M. P. Lindo (1819-1877), an Englishman by birth, and C. Vosmaer (1826-88), an art critic and poet. In 1860 was pub. E. D. Dekker's romance, *Max Havelaar*, an indictment of D. colonisation. Dekker (q.v.) had a great influence on the succeeding generations, who greeted in him their pioneer. W. Kloos (1859-1938), F. van Eeden (1860-1932), A. Verwey (1865-1937) (qq.v.), and the sensitive van Deyssel (1864-1952) were fervent adherents of art for art's sake and associated in a periodical, *De Nieuwe Gids* (*The New Guide*), in opposition to the superannuated *Guide*. Its first pub. in 1885 marked another literary event in the second half of the 19th cent., inaugurating a prolific movement in which the poet H. Gorter (1864-1927), the novelists L. Couperus (q.v.) (1863-1923) and J. van Looy (1855-1930), and the dramatists H. Heijermans (1864-1924) and Jan Fabritius (b. 1871) (qq.v.) stand out as pre-eminent. Later writers are I. Querido (1873-1932), author of naturalist novels, the poets P. C. Boutens (1870-1943), J. H. Leopold (1865-1927), and Henriette Roland Holst (1869-1953), and the novelist A. van Schendel (1874-1946). Among the poets of the last few decades should be noted: Adama van Schelteme, G. Gossaert, J. C. Bloem, J. Greshoff, Werumeus Buning, J. Slauerhoff, H. Marsman, J. Engelman, A. Donker, M. Nijhoff, and A. Roland Holst. Among the novelists are numbered: A. van der Leeuw, N. van Suchtelen, A. Coolen, S. Vestdijk, J. F. Fabritius Jr., F. Bordewijk, A. den Doolaard, A. Helman, and T. de Vries.

After the war a group of young authors became known, among them A. H. Nijhoff,

Hella Haasse, Anna Blaman, Alfred Koesmann, and Adriaan van der Veen. Some of their novels deal with the Ger. occupation, and a number of their works have been trans. into Eng. At the same time Gerrit Achterberg, Guillaume van der Graft, Koos Sehuur, and Hans Lodeizen should be mentioned as outstanding post-war poets. Lodeizen became known posthumously, and is called the predecessor of the generation known as the *Viijftigers* (Fifties), a group of young poets under the leadership of Simon Vinkenoog. The latter was the editor of a literary magazine called *Blurb*; he also ed. an anthology, *Atonaal*, with poems by Remco Campert, Hans Andreus, Hugo Claus, Gerrit Kouwenaar, Jan G. Elburg, Lucebert, and himself. See also FLANDERS, *Flemish Language and Literature*. See J. van Ginneken, *Handboek der Nederlandse Taal*, 1913-14 (on literature); A. J. Barnouw, *Holland under Queen Wilhelmina*, 1923; J. de Graaf, *Le siècle littéraire en Hollande et el naturalisme français, 1880-1900*, 1938; R. A. Kolléwijn, *Nederlandse spelling, geslacht en verbuiging*, 1942; C. G. N. de Voors, *Geschiedenis van de Nederlandse Taal*, 1943; W. L. M. E. van Leeuwen, *Dichterschap en Werkelijkheid*, 1946; A. den Besten, *Stroomgebied*, 1954.

Dutchman's Breeches, see DICENTRA.

Dutens, Joseph Michel (1765-1848), Fr. engineer, was appointed chief engineer of the dept of Léman in 1805, and assisted in constructing the railway via the Simplon Pass. His *Mémoires sur les travaux publics de l'Angleterre*, 1819, was the fruits of his appointment to study the inland navigation of England.

Du Toit's Pan, see DIAMOND.

Dutt, Romesh Chandra (1848-1909), Indian writer and civil servant, was a native of Calcutta, and was educ. at Presidency College before he came to England and studied at Univ. College, London. Having passed with the highest distinction into the Indian Civil Service (1871), he rose to become divisional commissioner in 1894, being the first Indian to hold this post. In 1897 he retired from the service, and from 1904 to 1906 acted as revenue minister of the Baroda state. He wrote on the economic hist. of his country from 1757 until 1900, trans. Sanskrit writings into Eng. verse, including the *Mahabharata*, 1898, and the *Ramayana*, 1900, and pub. many novels in his native Bengali. See life by B. N. Gupta, 1911.

Dutt, Toru, or Tarulata (1856-77), Indian author, was a Christian girl of Calcutta, who, like Marie Bashkirtseff, developed in her girlhood a literary genius which showed small sign of immaturity. For over 3 years (1869-73) she was abroad in France and England. With her sister Aru D., who also d. very young, she wrote *A Sheaf Gleaned in French Fields*, 1876, containing Eng. versions of Fr. poems, and she also trans. into Eng. passages from the Sanskrit *Vishnupurana*. Her novel in Fr., *Le Journal de Mlle D'Anvers*, was pub. after her death. Sir E. Gosse ed. her *Ancient Ballads and Legends of Hindustan*, 1882.

Dutton, Edward Payson (1831-1923), Amer. publisher. He founded and became first president of the firm of E. P. Dutton and Company in 1852 in Boston, Massachusetts, and moved to New York City in 1870. John Macrae, senior (1866-1944), became president in 1923, having in 1906, with J. M. Dent of London, launched *Everyman's Library*, the world's largest library of great books. Elliott B. Macrae (1900-) became president in 1944.

Duty, see EXCISE DUTIES and CUSTOMS DUTIES.

Duumviri, name applied in the Rom. republic to a magistracy of two: (1) *Duoviri Sacrorum* were the first 2 men to whom was entrusted the charge of the Sibylline books; they were eventually superseded by *decemviri* (q.v.). (2) *Duoviri navales* were specially elected for the purpose of equipping or recruiting the navy. (3) *Duoviri Jure Dicendo* were men with the highest judiciary powers in municipal tns. (4) *Duoviri Aede Dedicandae* were elected for the purpose of dedicating a temple. (5) *Duoviri Perduellionis* in early times tried those accused of treason.

Duval, Claude (1643-70), highwayman, b. Dompont, Normandy, and came over to England as servant to the duke of Richmond after the Restoration. Eventually he was hanged for his crimes, but his epitaph in Covent Garden Church, London, duly recorded his gallantries:

'Here lies Du Vall: Reader, if male thou art,
Look to thy purse: if female to thy heart.'

Duveyrier, Henri (1840-92), Fr. traveller, b. Paris, studied Arabic, and from 1857 to 1862 explored the Sahara, and lived for sev. months with the Tuareg, whose manners and speech he described in his *Exploration du Sahara: les Touareg du Nord*, 1864. He also interested himself in the 'shats' of Algeria and Tunis. In 1881 he pub. *La Tunisie*.

Dux, see DUCHCOV.

Duxbury, city of Plymouth co., Massachusetts, U.S.A., on D. Bay, 30 m. SE. of Boston. The cable line laid across the Atlantic in 1869 from Brest, France, terminates here. In 1872 an imposing monument was erected on Captain's Hill to Miles Standish, one of the first settlers. The house of his son, Alex Standish, built in 1666, is still standing. Pop. 3167.

Duze, see DIETZE.

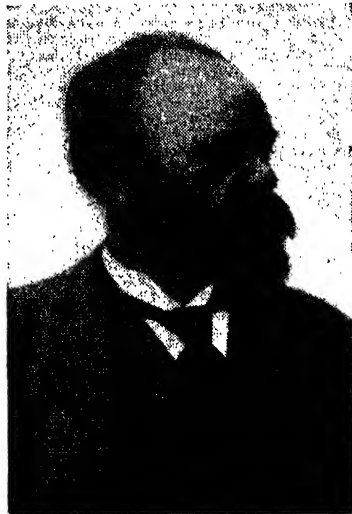
Dvina, name of 2 rvs. in Russia: 1. The N. D. is formed by the confluence of the rvs. Sukhona and Yug. and flows NW. into the D. gulf of the White Sea. Length (with Sukhona) 820 m.; drainage area 138,000 sq. m. Its chief trbns. are the Vychedga and the Pinega; the main ports are Archangel and Kotlas. The N. D. is chiefly used for floating timber; it was the chief route of the Muscovite foreign trade in the 16th-17th cents.

2. The W. D. (Latvian *Daugava*, German *Düna*) rises in the Valday upland near the source of the Volga, and flows W. into the Gulf of Riga. Length 637 m.; basin 33,000 sq. m. The chief ports are

Riga, Daugavpils, Vitebsk. Navigation is limited by shallows. The W. D. was of great importance in the Middle Ages as part of the trade route from Scandinavia to Byzantium. During the First World War it was an effective barrier against Ger. offensives in 1915-16.

Dvinsk, see DAUGAVPILS.

Dvořák, Antonín (1841-1904), Bohemian musical composer, b. of humble parents at Nelabozevs. Destined at



ANTONIN DVOŘÁK E.N.A.

first to follow his father as an innkeeper and butcher, his remarkable talent for music so attracted the attention of his first teacher that he was sent to the Prague organ school in 1857. He joined the orchestra of the Bohemian Provisional Theatre at Prague in 1862, and 11 years later became organist of the church of St Adalbert in that tn. During this time he wrote many songs, overtures, and symphonies, and in 1874 produced his opera *King and Charcoal-Burner*, which was not a success; he composed diligently in this period when he was, for a time, under the strong influence of Wagner. His first success came outside the theatre, in 1873, his *Hymnus* with text by Halek being well received. Then, through the influence of Brahms, Vienna became interested in his work, and after the pub. of his *Moravian Duets* and particularly his *Slavonic Dances*, 1878, his fame spread into most countries. He was appointed director of the National Conservatory of Music in New York (1892-95), and in 1901 director of the Prague Conservatory. The most successful of his choral works produced in

England was *Stabat Mater*, 1883. Visited England sev. times up to 1887, conducting *The Spectre's Bride*, the *Requiem*, and *St Ludmila*. After his appointment in New York the influence of negro folk-music became evident in such works as the *New World* symphony and the string quartet Opus 96. In his last years he somewhat eschewed symphony and chamber music for opera and symphonic poems. D. had great creative power; 'intellectual control' is subordinated to elemental expression. At times a certain melancholy and religious fervour characterise his work, which shows a very wide range. He is often compared with Smetana, for both represent in Czech music the typically national-classical generation. Other well-known works of D. are the operas *The Devil and Kate*, 1899, and *Rusalka*, 1901, the symphonies in D minor, Opus 70, and G major, Opus 88, the overture-trilogy *Amid Nature, Carnival, and Othello*, the splendid cello concerto and much of the admirable chamber music. See Karel Hoffmeister, *Antonín Dvořák* (Eng. trans.), 1928; Paul Stefan, *The Life and Work of Anton Dvořák* (Eng. trans.), 1941; V. Fischl, *Antonín Dvořák: his Achievement*, 1943; A. Robertson, *Dvořák* (Master Musicians), 1944; O. Sourek, *Antonín Dvořák: his Life and Works* (Eng. trans. by Daphne Rushbridge), 1952.

Dvůr Králové (Ger. *Königinhof*), Czechoslovakia in the region of Hradec Králové (q.v.), on the Labe (see ELBE). Here, in 1817, were discovered the controversial *Königinhof MSS.*, said to be 13th-cent. poems in Czech; T. G. Masaryk (q.v.) demonstrated that these are forgeries. There are brewing, milling, and textile industries. Pop. 13,700.

Dwale, see *ATROPA*.

Dwarf (from A.-S. *dwæorg*), an individual considerably below normal size. The causes of dwarfism are somewhat obscure; in most cases heredity plays an unimportant part and the general diminutiveness of all the structures is not readily explainable by any known defect in the nutritional conditions of the embryo. A distinction should be drawn between pygmies, where small stature is normal to the race, and individuals who fall considerably short of the size of their parents. True D.s should further be distinguished from rickety D.s, where the deficiency is not general, but can be attributed to a more or less local condition. Such cases usually exhibit a bent spine and misshapen lower limbs, while the head and other structures may be of normal size, the effect of the whole being as a result grotesque. Even the true D.s are found to possess heads and chests large in proportion, though many famous D.s are said to have presented in miniature the proportions of a well-built normal man. While giants are often constitutionally feeble, the dwarf condition is not usually accompanied by other physical and mental defects, except that very diminutive individuals are not uncommonly sterile.

Famous Dwarfs. Owing to their dainty

appearance and lively intelligence, D.s have often been the favourite attendants of persons of high position, and hist. records many instances of the high value set upon diminutive persons by wealthy European and Oriental monarchs. The Egyptian Pharaohs undoubtedly used members of the dwarf tribes of equatorial Africa as court attendants. It is also recorded that Ptolemy Philadelphus had as tutor the poet Philetas of Cos, who was said to be so small that he had to wear leaden weights to avoid being blown away. Julia, niece of Augustus, had 2 D.s, Coropas and Andromeda, each of whom was 2 ft 4 in. in height. Mary I of England had a page named John Jarvis who



E.N.A.

THE WEDDING GROUP: GENERAL TOM THUMB AND LAVINIA WARREN

was 2 ft high. A fair amount of information is obtainable concerning the life of Jeffery Hudson, who was born of normal parents in 1619 at Oakham, Rutland. At 9 years of age he was 18 in. high and well proportioned in every way. He was introduced to Charles I and his queen in a pie which was brought to the dinner table, and was adopted into the service of the royal family. He became a soldier in the Royalist cause, and is said to have fought 2 duels, 1 with a turkey-cock and 1 with a full-sized antagonist, whom he shot dead. At 30 years of age he was 3 ft 9 in. high, having grown, so he announced, during his imprisonment by Turkish pirates, who ill-treated him. He d. in 1682 at the age of 63. Queen Henrietta Maria also had 2 D.s, Richard and Anne Gibson, who were married at the instance of the queen and had children of normal size.

As a lucrative form of stage presentation D.s were popular for a long period. Of all D.s Tom Thumb (d. 1883) (called Gen. Tom Thumb) was the most famous; he travelled the world over, and was presented to royalty. He was a man of good address, well mannered, and generous. He retired, having made much money, but when he heard that his great chief, Barnum, was in financial difficulties and facing ruin he immediately went to

him, although well advanced in years, and suggested another tour. Barnum took advantage of this and made a fresh start. A D. called Miss Morgan, the celebrated Windsor Fairy, was popular in the late 18th cent.; she weighed only 18 lb. It was claimed that George III conferred on her the title of Lady, and she probably had as much right to that title as Tom Thumb had to his generalship. Elliston, for years lessee at Drury Lane, once exhibited a Dutch D. named Simon Paap at a room in Piccadilly, but he did not draw the public. Lydia Walpole was a famous D. at the fairs in the early 1800's, and so was Jonathan Dawson, who was 3 ft high when he reached the age of 50. There was from time to time a good deal of trickery over D.s, who were often trained children who disappeared from the stage when they began to grow too big. Perhaps the last 2 famous D.s were It, brothers named Magei; one claimed to be a count and the other a baron. They prepared little plays, boxed, and fought duels, and were seen in Britain in 1898.

The Dwarf in Mythology. The folk tales of most countries include accounts of diminutive people, usually with superhuman attributes. It has been suggested that such accounts have their origin in the existence of pygmy races in Europe in the Neolithic period, but the widespread nature of the fairy legend hardly needs such explanation. The fairy is by no means always pictured as of diminutive size. The true fairy, or invisible spirit, is probably a little person simply in order to explain the difficulty of seeing him. It is otherwise, however, with the D.s of Teutonic legend. These are people of grotesque appearance, often malicious and of marvellous cunning in the working of metals. D.s amongst the ignorant and superstitious have been credited with supernatural powers, especially those individuals who are deformed. For D. races see PYGMIES. See W. Bodin and B. Hershey, *World of Midgets*, 1935.

Dwarfing Trees, art introduced some centuries ago by the Japanese. The tiny trees have all the appearance and characteristics in miniature of the same species growing freely in the open; they sometimes live as long as 250 years. They are best grown from seed, and the treatment consists of frequent pruning of shoot and root, twisting and bending of the branches, insufficient nourishment, the use of small pots so as to confine the roots and anything which can paralyse vitality without actually killing the plant.

Dwarka, maritime tn of Saurashtra state, India, in the extreme NW. of Kathiawar. D. is one of the 7 great places of pilgrimage for Hindus, and is reputed to have been founded by Krishna as his cap. The temple of Dwarkanath, which is a title of Krishna, is believed by many Hindus to have been built in one night.

Dwight, Timothy (1752-1817), Amer. clergyman and poet, b. Northampton, Massachusetts. A precocious child, he could read the Bible at the age of 4, and at 13 he entered Yale, where from 1771 to 1777 he was a tutor. From 1783 to 1795

he was Congregationalist minister at Greenfield Hill, Connecticut. His poem *America*, 1772, was followed by *The Conquest of Canaan*, the first Amer. epic, and *Greenfield Hill*, 1794, a poem in the 18th-cent. tradition. In 1795 he was appointed president of Yale, and wielded great influence, being nicknamed 'Pope Dwight.' Yale dates its modern era from his administration. See C. E. Cunningham, *Dwight, a Biography*, 1942.

Dwina, see DVINA.

Dwygyfylchi, see PENMAENMAWR.

Dyaks, or **Dayaks**, certain tribes inhabiting Borneo. They may belong to the same race as the Malays. See D. or



E.N.A.

DYAK WARRIOR

Ibans are the most numerous of the races of Sarawak. In 1940 the census showed 52,759 men, 57,101 women and 57,712 children, a total of 167,572. There is much conjecture as to the origin of these people, but it is certain that they are not indigenous to the country. They are most numerous in Sarawak and Labuan and from there have spread to Brunei and to North Borneo in recent years. The Ibans are a vigorous healthy race who dwell in long houses containing as many as 40 families. They have little native culture but are quick to learn, and have borrowed customs and ideas freely from many races, including Europeans, with whom they have come in contact. Normally they plant hill padi, felling large areas of jungle for the purpose, but in recent years they have adopted irrigation and, especially in the Kanowit Dist., have been very successful. They own large areas of rubber, and being of a thrifty nature some of them are men of considerable wealth. Land D. in 1940 numbered about 37,000, and are only

found in Sarawak. Their origin is obscure, but it is of interest to note that relics of Hindu culture have been found in the Samarahan and that some Land D. tribes, alone of the inhab. of Borneo, burn their dead. They are a peaceful people and for many years were oppressed by the Brunei nobles and raided by the Sea D., and it was their pitiful state that first roused the sympathies of Sir James Brooke. The D. are slightly built, and in colour lighter than a typical Malay. They are very strenuous and persistent workers and have a cheerful disposition. Their chief industries are weaving and spinning, dyeing, and the manuf. of iron and steel implements. The practice of head-hunting is now unknown. In warfare their chief weapons were the blowpipe and a long spear or a curved sword. See C. Bode, *Head-Hunters of Borneo*, 1882; H. L. Roth, *The Natives of Sarawak and British North Borneo*, 1896; W. O. Krohn, *In Borneo Jungles*, 1927; T. Harrison (ed.), *Borneo Jungle: An Account of the Oxford Expedition to Sarawak*, 1938; Agnes Keith, *Land Below the Wind*, 1939.

Dyas, see PERMIAN.

Dybbel (Ger. Düppel), vil. of S. Tutland (Slesvig), Denmark, on the peninsula of Sundewitt, 15 m. N.E. of Flensburg. It was the site of a struggle between the Danes and Germans in 1848-50, and was bombarded by the Prussians in 1864.

Dyce, Alexander (1798-1869), critic and scholar, b. Edinburgh. He was educ. at Edinburgh High School and Exeter College, Oxford. He took holy orders, but in 1825 settled in London and devoted his time to literature. His first pub. was *Select Translations from Quintus Smyrnaeus*, 1821. He is famous for his annotated eds. of the early dramatists and poets, which include Peele, 1828 and 1839; Webster, 1830; Greene, 1831; Middleton, 1840; Beaumont and Fletcher, 1843-6; and Marlowe, 1850. His scholarly ed. of Shakespeare appeared in 1857. D. also ed. the poems of Shakespeare, Pope, Akenside, and Beattie, and the critical and theological works of Richard Bentley. With Collier, Halliwell, and Wright he founded the Percy Society, and for the Shakespeare Society pub. 2 early plays which he had discovered, namely *Timon* and *Sir Thomas More*. His *Recollections of the Table Talk of Samuel Rogers*, 1856, must also be mentioned. He attacked Payne Collier's ed. of Shakespeare in *Remarks on Mr J. P. Collier's and Mr Charles Knight's Editions of Shakespeare*, 1844, and *Strictures on Mr Collier's New Edition of Shakespeare*, 1859, which cost him his friendship with his fellow writer. D. left his valuable library, which contained many rare books, to the S. Kensington Museum, London. In the *Catalogue*, pub. in 1875, is a 'biographical sketch,' by John Forster.

Dyce, William (1806-64), artist, b. Aberdeen. Trained in Edinburgh, London, and Rome, he was influenced by the early Florentine masters and also by the Ger. 'Nazarenes,' then settled in Rome. This made for an earnest style of painting,

precise in detail, in which he was a precursor of the Pre-Raphaelites. 'Titian's first essay in Colouring,' 1859, and 'Pegwell Bay,' 1861, are 2 outstanding pictures, though he is also noted for the Arthurian frescoes in the robing-room of the House of Lords.

Dyck, Sir Anthonis (Antony) Van, see VAN DYCK.

Dye, a substance, usually coloured, which is used to impart colour to other materials such as textiles, paper, plastics, etc. This colour must be reasonably permanent (fast) to removal by rubbing, the action of water, soap, solvents, and other detergent agencies; and to chemical or physical alteration through action of light, heat, gas fumes, or action of chemicals to which it may normally be subjected. D.s are usually applied for these purposes by processes of dyeing. Formerly obtained from various natural sources, D.s are now almost entirely produced by chemical synthesis.

Dyeing consists essentially in the solution of a D., some chemical modification of a D. or chemicals that can form D.s by interaction, in water or other solvents, and treatment of the substance to be coloured with these solutions. In general, the molecules of the D. are held between the molecules of the body being dyed by physical or chemical forces, and this is the distinction between dyeing and other forms of coloration. **Dyeing** (technical) is the uniform coloration of textiles by D.s; **printing** (textile) is local coloration by essentially the same processes as dyeing, to form single- or multi-coloured prints.

Dyeing has been practised for many centuries, as evidenced by the discovery of dyed mummy cloths, etc. Until the middle of the 19th cent. only a few, natural D.s were available, the majority of which required a mordant (q.v.) for their application. The dyeing process was often laborious and the range of colours limited. Following the discovery of the first successful synthetic D. (mauve) by W. H. Perkin in 1856, a very large number of easily applied, synthetic D.s of many chemical types, covering a much wider colour range and often of improved fastness, have been introduced. Naturally, the production and use of natural D.s has fallen considerably and now represents only a fraction of the total output.

D.s and D.-forming products are selective in their relations to different kinds of fibres, a given D. being absorbed from solution by some and not by others. When the D. is absorbed it is said to have an 'affinity' or to be 'substantive' to the fibre.

Classification of Dyes.—D.s may be classified either according to the method by which they are applied or according to their chemical constitution. The first method of classification also takes into account the different types of textile fibres. These comprise cellulosic (cotton, flax, viscose, rayon, etc.), cellulose derivatives (cellulose acetate), protein (wool, silk, casein, and groundnut protein, etc.), and purely synthetic fibres (nylons, Terylene, acrylic polymers,

etc.). For each class of fibres only a limited range of D.s may be successfully applied.

Classification by Application Method.

1. **Basic D.s.**—The majority of the early synthetic D.s belong to this class, e.g. mauveine and magenta. Other important examples are methylene blue and the rhodamines. They include many D.s which give clear, vivid dyeings of great beauty, but many of them are easily faded by light. Partly for this reason they have now become less popular. They have a natural affinity for protein fibres, to which they are applied from a slightly acidic dyebath, the D.s combining with acidic groups in the fibre. They also have an affinity for impure cellulosic fibres such as jute and hemp, but not for pure cellulose (e.g. cotton). A mordant (q.v.) is then required, the most common being tannic acid fixed with tartar emetic.

2. **Acid D.s.**—These contain an acidic group and have a natural affinity for protein fibres and nylon, which contain basic groups with which the D.s combine. Applied from an acidic solution, the D.s are sub-divided into groups according to the degree of acidity required. Those which are applied from the weakest acid solution have the strongest affinity and have the best fastness to washing and similar treatments. They are known as acid milling D.s. The others, which are applied from stronger acid solutions, are known as levelling D.s, since their poorer fastness permits level dyeings to be readily obtained.

3. **Direct cotton D.s.**—These are D.s containing an acidic group and which also have a direct affinity for cellulosic fibres. They do not require the use of a mordant. Their introduction in 1884 was thus of considerable importance. The first member of the group, Congo red, is a disazo D. derived from benzidine, and the majority of direct D.s follow this pattern. In application, the addition of a simple salt (common or Glauber's salt) is needed to promote affinity and the D.s may be sub-divided according to the proportion of salt required. The affinity is also affected by the temp. of the D.-bath, and this property is also used to regulate the course of dyeing. Fastness, particularly to washing, is not good, but it may be improved by suitable after-treatments, e.g. with copper or chromium salts, diazotisation and coupling, etc.

4. **Mordant D.s.**—This is a class of D.s which are applied with the aid of a second substance (known as the mordant) which is not a D. but which combines with the D. to form a more complex and less soluble molecule, often known as a lake. Mordants are usually metal-containing salts (e.g. chromium, copper, aluminium, iron, etc.) and these form lakes with essentially acidic D.s. For basic D.s complex acids (e.g. tannic) are used as mordants, but basic D.s are not normally classified as mordant D.s. The majority of the natural colouring matters belong to this group. They may be regarded as true mordant D.s, since they have no

affinity unless the mordant is first present on the fibre. This distinguishes them from the modern synthetic mordant D.s which also behave as normal acid D.s, the purpose of the mordant (usually a salt of chromium) being principally to improve the fastness properties. Among important natural mordant D.s is alizarin (q.v.), obtained from the root of the madder plant but now manufactured synthetically. Its most important application was on an aluminium mordant to produce the famous Turkey red. On other metal mordants differently coloured dyeings are obtained (e.g. tin—pink, iron—violet, chromium—puce). Logwood, obtained from campeachy wood, is the only natural mordant D. still used commercially (see HAEMATOKSYLIN). Applied on a suitable mordant, e.g. iron or copper, it produces dense black shades. An interesting modern example is its use for dyeing nylon. Synthetic mordant D.s (chrome colours) are used for the production of fast dyeings on wool. The mordant (usually a dichromate or chromate) may be applied before, together with, or after the D., which is itself applied in much the same way as an acid D.

5. **Metal-containing D.s.**—These D.s are a modern innovation and are becoming used increasingly widely. They represent a logical development from the mordant D.s, the D.-metal complex (usually with chromium or copper) being formed during the manufacturing process rather than on the fibre during dyeing. D.s of this type are now available both as direct D.s for cellulosic fibres or as neutral dyeing acid D.s for wool and other basic fibres. They have good fastness properties.

6. **Ingrain D.s.**—The term 'ingrain' is very old and has been used to denote insoluble D.s formed by chemical reaction, on the fibre, of reagents applied either from a mixed bath or from a succession of baths. The modern technical description places them more specifically into 2 groups: (a) Insoluble azo D.s.—These are also known as azoic D.s and as ice colours. Conventionally, 2 components of the D. are applied separately to the fibre. The first is an aromatic hydroxy compound, known as naphthol, and often a phenol or naphthol, which is applied uniformly in alkaline solution. On subsequently passing the prepared material through a solution of a diazotised amine (a diazo compound), coupling occurs and results in the precipitation of a coloured, insoluble azo compound inside the fibres. In a refinement of this technique, particularly useful for textile printing, the diazo compound is converted into a stable, non-coupling form which may safely be mixed with a naphthol without the D. being formed. The two are then applied together. On treating the material with mild acid the diazo compound is regenerated and coupling again takes place. Since the final D. is insoluble, the fastness to washing, etc., is good. Many members are also resistant to attack during normal processing. Insoluble azo D.s are used mainly for colouring cellulosic fibres and

also, by modified techniques, the newer synthetic fibres. (b) Oxidation colours.—These are black or brown D.s produced by the oxidation of suitable aromatic amines on the fibre to be dyed. By far the most important is aniline black, obtained from aniline (q.v.). Aniline, together with either hydrochloric or sulphuric acid and an oxidising agent, is first applied to the cloth, which is then heated in a moist atmosphere and subsequently treated with a dichromate and acid. The aniline is oxidised in a number of stages, resulting finally in the formation of a dense black precipitate within the fibre. Aniline black is applied mainly to cotton, especially by printing, and also gives dense blacks on nylon. Other amines, when oxidised in a similar way, give brown shades, and are used for the dyeing of fur and of hair.

7. Vat D.s.—This class includes 2 natural D.s of great antiquity, indigo (q.v.) and Tyrian purple, but all the rest are synthetic. Their name derives from the ancient practice of fermenting indigo in a vat to render it fit for use. As with the ingrain D.s, these D.s are also insoluble in water. For application, the insoluble vat D. is first treated with a reducing agent in alkaline solution (usually sodium hydro-sulphite in caustic soda). This is the process of vatting and replaces the older fermentation method. It converts the vat D. into its so-called leuco compound, which is soluble in the alkaline solution. The material is then dyed with this solution. On exposing the dyed material to the atmosphere, oxidation of the leuco compound occurs and the insoluble vat D. is re-formed, now within the fibre. Finally, washing and soaping treatments, which remove surplus D. and usually brighten the shade of fixed D., complete the process. This method is normally used mainly for cellulosic materials, since the conditions are detrimental to many other fibres. Modified methods of application are often used. Thus, in textile printing, formaldehyde-sulphoxylate is used as the reducing agent. This delays the formation of the leuco compound until the prints are steamed, this process being an essential one in printing. A different kind of modification is in the preparation, by the manufacturer, of stable, soluble derivatives of the leuco compounds. These require no chemical treatment by the dyer before use, and may be applied to cellulosic fibres in the same way as direct D.s of low substantivity or to basic fibres as acid D.s. They are reconverted, on the fibre, to the insoluble vat D. by treating the dyed goods with an acidic oxidising agent, most commonly sodium nitrite in sulphuric acid, but more complex systems are used for printing.

The vat D.s as a class show good all-round fastness properties. The yellow and orange D.s, however, may bring about degradation of the material on which they are dyed if this is exposed for long periods to sunlight.

8. Sulphur (or Sulphide) D.s.—These are so called because they all contain

sulphur in the molecule and are mostly applied from baths containing sodium sulphide. Like the vat D.s they are insoluble and are converted into alkali soluble leuco compounds for application, in this case generally by the use of sodium sulphide and sodium carbonate. The insoluble D. is regenerated on the fibre by oxidation, usually by the atmosphere. Sulphur D.s do not, as a class, give very bright colours, but mostly represent the cheapest form of intense fast colour available for dyeing cotton goods in dark utility shades, black, navy, khaki, etc.

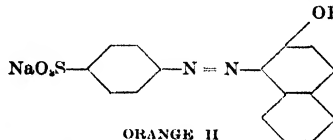
9. Disperse D.s.—In this class the D.s are also insoluble. Instead of being chemically converted into a water-soluble derivative, the D.s are very finely ground and used in an aqueous dispersion with the assistance of a dispersing agent. They were originally introduced for application to cellulose acetate, which cannot be dyed with the normal water-soluble D.s. More recently they have acquired further importance in dyeing the newer synthetic fibres such as nylon, Terylene, Orlon, etc.

10. Reactive D.s.—These have been introduced very recently (1956). Intended primarily for cellulosic fibres, they contain reactive groups which allow the D.s to combine chemically with cellulose and thus become an integral part of the fibre molecule.

11. Mass coloration of manufactured fibres.—This consists of the inclusion of suitable colouring matters in the fibre solution or molten fibre-substance before extrusion. The colouring matters are usually insoluble pigments (often azoic, anthraquinonoid or phthalocyanine, but in some cases inorganic) compounded with a dispersing agent. The fibres which result are uniformly coloured, and with carefully chosen pigments the fastness properties also are good.

Classification by Chemical Structure.

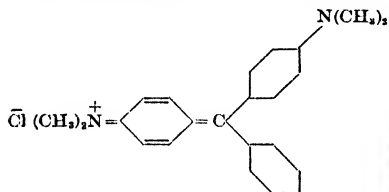
1. Azo D.s.—This is by far the largest chemical class, and is characterised by the presence of the azo group $-N=N-$ joined to 2 benzene or naphthalene residues. Mono-, di-, tri-, and tetra-azo D.s, i.e. those containing 1, 2, 3, or 4 azo groups in the molecule, are in use. In addition to the azo group they also contain either a hydroxy ($-OH$) or amino ($-NH_2$) group. They may be insoluble (see above) or soluble in water. The latter contain additional ionic groups, mostly sodium sulphonate ($-SO_3Na$), which impart this solubility. Soluble azo D.s behave as acid D.s, those



derived from the diamine benzidine also behaving as direct D.s (see above), for which they are chiefly used. An example of a simple acid azo D. is Orange II. In

addition to their use as azoic colours (see above) the insoluble azo D.s may also be used as dispersed D.s and as pigments.

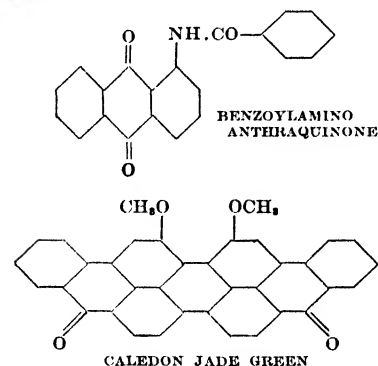
2. Di- and triphenyl methane D.s.—The majority of the basic D.s come in this group and were amongst the earliest synthetic D.s. They are derivatives of di- and triphenyl methane containing usually 2 or 3 basic amino groups and are presented as their salts, usually with hydrochloric acid. The ionised basic group in this way confers both water solubility and affinity for acidic fibres such as wool and silk. An example of a triphenyl methane D. is malachite green. Many of these D.s,



MALACHITE GREEN

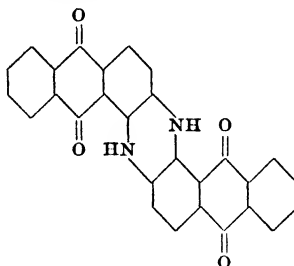
when sulphonated, may be used as acid D.s. Closely related to the di- and triphenyl methane D.s are the xanthene (e.g. rhodamine *S*), acridine (e.g. acriflavine) and phthalein (e.g. rhodamine B) groups, which are also used as basic D.s.

3. Anthraquinone D.s.—These are more or less complex derivatives of anthraquinone (q.v.). By far the most important members of this class are vat D.s. These range from relatively simple derivatives of anthraquinone such as benzoylamino anthraquinone, which is a yellow D., to far more complex compounds such as the dibenzanthrone D. caledon jade green, the first successful green vat D.



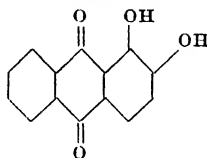
The first synthetic anthraquinonoid vat D. was indanthrone, a blue D. of exceptional fastness properties. Many derivatives of indanthrone are now used as well as derivatives of pyranthrone and other complex structures. All these D.s are

insoluble in water, but are capable of being reduced to the alkali soluble leuco forms (see INDIGO). Hydroxy anthraquinones may be employed, not as vat



INDANTHRONE

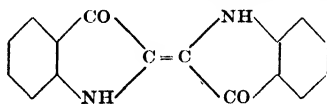
D.s but as mordant D.s. Indeed, some of the most important natural mordant D.s belong to this class. Thus alizarin, traditionally extracted from madder root, is 1:2-dihydroxyanthraquinone, and purpurine, which accompanies it in madder, is 1:2:4-trihydroxyanthraquinone. Alizarin was first synthesised in 1868 by Gräbe and Liebermann and since then many other synthetic anthraquinone mordant D.s have been prepared. In



ALIZARIN

addition, some amino anthraquinones are used as dispersed D.s and as pigments and also, when sulphonated, as acid D.s.

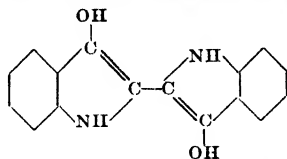
4. Indigo and derivatives.—Indigo, which is the oldest known vat D., was traditionally obtained from the plant *Indigofera tinctora*. Following many years of research it was first synthesised in 1880 by von Baeyer and manufactured in 1897. It is now almost exclusively produced synthetically. It is insoluble in water and for use it is reduced to its leuco compound indigo white, which is soluble in alkali. Other vat D.s give so-called leuco compounds in a similar way, although not all are white. Many



INDIGO

derivatives of indigo are now synthesised, particularly the halogenated compounds. It is interesting to note that the valuable anet D. Tyrian purple, traditionally

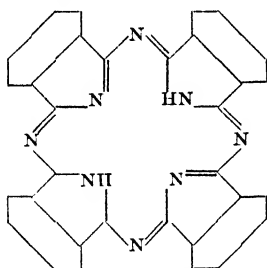
obtained from the mollusc *Murex brandaris*, is 6:6'-dibromoindigo. This D. is not now manufactured commercially.



INDIGO WHITE

Thioindigo, in which the $\backslash \text{NH} /$ groups of indigo are replaced by $\backslash \text{S} /$, was synthesised by Friedlander in 1906. It, and many of its derivatives, are in use as important vat D.s.

5. Phthalocyanines.—The first phthalocyanine was discovered in 1927 and commercial production commenced during the following few years. They are the most recent chemical class of D. The parent compound, phthalocyanine itself, is a blue pigment. Its chemical structure closely resembles the porphyrin structure, which is in turn the parent of many biologically important natural pigments (e.g. haemoglobin, chlorophyll). Like the



PHTHALOCYANINE

natural porphyrins, the phthalocyanines contain a combined metal, replacing the 2 central hydrogen atoms, the most important metal being copper. The first phthalocyanines were pigments, but water soluble D.s are now available. They show very good fastness properties and chemical stability.

6. Sulphur D.s.—The first D. of this class, 'Cachou de Laval,' was prepared in 1873 by fusing sawdust, bran, etc., with sodium sulphide. Later members are made in a more refined manner by fusing aromatic amines, nitro-amines and phenols with sodium sulphide or sulphur. Even so, these D.s do not fall into a well-defined chemical class and in many cases their structure is not known. They all contain combined sulphur, but only a part of this is contained in the essential chromophoric (i.e. colour conferring) system of the molecule.

See also BLEACHING.

See C. M. Whitaker and C. C. Wilcock, *Dyeing with Coal-Tar Dyestuffs*, 1949;

K. Venkataraman, *The Chemistry of Synthetic Dyes*, 1952; T. Vickerstaff, *The Physical Chemistry of Dyeing*, 1954; H. A. Lubs, *The Chemistry of Synthetic Dyes and Pigments*, 1955.

Dye Trade. The hist. of the T. in dyestuffs goes back to the middle of last century, when Sir W. H. Perkin (then a lad of 18) discovered the aniline D., 'mauve' or 'mauveine.' Eng. people were slow to see the importance of the discovery, and as a result of farsighted action on the part of the Germans there was developed in Germany an immense D.-making industry, enabling the Ger. firms to obtain practically a monopoly of the D. T. of the world. When the First World War broke out the Germans had ready to hand factories fully equipped for the production of high explosives of all kinds in great quantities. On the other hand Great Britain and her allies were put in a position of the gravest possible embarrassment and danger owing to the absence of such factories. After the armistice of 1918 the Brit. Gov., as the result of a series of resolutions passed by the Allies in Paris, took steps to prohibit the import of dyestuffs under the Customs Act, 1876. It was decided in the courts that the prohibition was illegal, and accordingly the Import Regulation of 1920 was passed, setting up a committee for the issue of licences for the importation of dyestuffs. Unfortunately there was an interval of nearly a year between the decision of the courts and the operation of the act, and the Germans availed themselves of that opportunity to pour into Great Britain enormous quantities of D.s of all kinds. The result was that for over 2 years after the act became effective the D.-makers of this country were struggling against an overwhelming burden of foreign competition. Since then, however, they have made very remarkable strides indeed—so remarkable that an unsuccessful effort was made by the Labour Gov. in 1930 to put an end to the act of 1920 (generally known as the Dyestuffs Act), the assumption being that the Brit. D.-makers had done so extraordinarily well that they were in no further need of protection. The Brit. D.-makers claimed that this act must be continued for a time unless the country was prepared to run the risk of seeing a great deal of the work which had been done thrown away and the development of the industry suddenly arrested, and this view prevailed in the House of Lords, where the gov. was defeated. To-day, of the dyestuffs used in Great Britain 93 per cent are produced in the country and all the intermediates are home-made. All that is left to the foreign producer is 7 per cent, consisting very largely of comparatively small quantities of D.s of a novel or particularly complex type, because Brit. D.-makers have wisely concentrated on the production of D.s for which there is the greatest demand. Before the First World War the production of D.s in Great Britain was about 9,000,000 lb. avoirdupois; by 1938 it had become 45,500,000 lb., and exports, which were 4,000,000 lb.

before the First World War, were 8,900,000 lb. When the act came into operation at the end of 1920 the price of dyestuffs was 4s. 4d. per lb.; the pre-war price was 1s. per lb. To-day the average price of Brit. D.s is 1s. 5d. per lb. Both in Germany and the U.S.A. the substantial D.-making industries have been sheltered by high protective tariffs, securing for the D.-makers a monopoly of their own market. This has been very effective in the U.S.A., where the tariff act of 1930 levies a duty of 7 cents per lb. plus 40 per cent *ad valorem* on Amer. selling price of similar competitive articles. Before the First World War, the production of D.s in Great Britain was about 9,000,000 lb.; by 1935 it was well over 40,000,000 lb.; while exports had risen from 4,000,000 lb. to 16,000,000 lb. The most recent figures reported for the U.S.A. are a total production of 143,000,000 lb., valued at \$160,000,000. Recent figures for U.K. production are not available, but in 1954 exports were 14,664 metric tons, valued at \$31.9 million. See also DYE.

Dyeline Process, see COPYING.

Dyer, Sir Edward (c. 1545-1607), poet and courtier, b. Sharpham Park, Somerset. After studying at Oxford he travelled for a time, and then entered the court of Elizabeth, who employed him on sev. embassies. He, Sir Philip Sidney, and Fulke Greville were intimate friends from boyhood, Sidney himself writing of their having 'one mind in bodies three.' D. and Greville were chief pall-bearers at Sir Philip's funeral. Spenser speaks highly of D. as a poet, but only one of his songs is now generally remembered, 'My mind to me a kingdom is.' His verse and prose writings were collected by A. B. Grosart (1872). See R. M. Sargent, *At the Court of Queen Elizabeth: the Life and Lyrics of Sir Edward Dyer*, 1935.

Dyer, George (1755-1841), author, b. London. He was educ. at Christ's Hospital and Emmanuel College, Cambridge. Besides writing a *History of Cambridge University* and other works, he assisted in the preparation of Valpy's ed. of the Gk and Lat. classics (141 vols.), ruining his eyesight in the work. His friend Charles Lamb speaks of him very tenderly in his essays 'Oxford in the Vacation' and 'Amicus Redivivus.'

Dyer, John (1699-1757), poet, painter, and clergyman, b. Llanfynydd, Carmarthenshire. Educ. at Westminster and Cambridge, he studied art in Italy from 1724 to 1725 and for some years travelled in Wales as an itinerant painter. In 1741 he took orders and became vicar of Calthorpe, Leicestershire. He has a definite, if modest, place in literature as the author of 3 poems, *Grongar Hill*, 1727, *The Ruins of Rome*, 1740, and *The Fleece*, 1757. The first of these is the best, and contains much true natural description of S. Wales scenery. Wordsworth had a high opinion of D. as a poet, and addressed a sonnet to him. He is included in Dr Johnson's *Lives of the Poets*.

Dyer, Reginald Edward Harry (1864-1927), soldier, b. Simla, India; son of

Edward D., a brewer. Educ. at Middleton College, co. Cork. Commissioned in the Queen's Regiment, 1885, and transferred later to 25th Punjab of the Indian Army. He served in the Burma campaign of 1886-7, and the Zakka Khel expedition of 1908. In the First World War he commanded the 45th Infantry brigade on the E. Persia border. Brigade-commander at Jalandhar, 1919, he was sent by the viceroy in April of that year to Amritsar, where rebellion was strongest. Here he pursued a policy of repression (see AMRITSAR) of which particulars became known only gradually; D. was appointed in May to command on frontier. An inquiry at Lahore, Nov. 1919, at which D. gave evidence, resulted in his being directed to resign. He was inventor of a range-finder. He wrote *The Raiders of the Sarkhad*, 1921. See life by I. Colvin, 1929.

Dyer, Thomas Henry (1804-88), historian and antiquary, b. London. His chief historical works are *Life of Calvin*, 1850, *History of Modern Europe*, 1861-4, and sev. vols. on Rom. hist. which were severely handled by critics. His antiquarian books on Pompeii and Athens met with greater approval.

Dyer, Sir William Turner Thiselton (1843-1928), botanist, b. Westminster. Prof. of natural hist. at R.A.C., Cirencester, 1868; prof. of botany, Royal College of Science, Ireland, 1870; assistant director at Kew Gardens, 1875; and director, 1885-1905. He ed. the Eng. ed. of Sachs's *Text-book of Botany*, 1875; also *Flora Capensis*, and *Flora of South Africa*. K.C.M.G., 1899.

Dyer's Rocket, see WEED.

Dyersburg, city of NW. Tennessee, U.S.A., co. seat of Dyer co. It manufs. staves, textiles, cotton-seed oil, and canned goods, and is a trade and processing centre for a timber and agric. area. Pop. 10,885.

Dyestuff, see PIGMENTS.

Dyfrig (Dubricius, Devereux) (c. 450-546), Celtic saint, founder of monasticism in Wales. His foundations extended from his first settlement in Gwent, on the Wye, to Caldey Is., and his rule over them as abbot-bishop gave him quasi archiepiscopal status. His disciples included Sts David, Tello, Iltyd, Cadoc, Cenydd, and Samson (qq.v.). He d. on Bardsey Is. on 14 Nov. His foundation of Llandaff is only legendary but his body was trans. there in 1120. See S. Baring-Gould and J. Fisher, *Lives of the British Saints*, 1908.

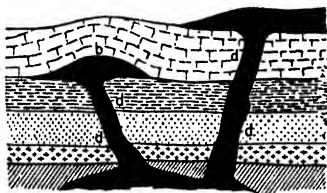
Dyke, a linear earthwork, a line of bank and ditch, which may be double or occasionally treble, designed to serve as a boundary or frontier. There is a possibility that certain Eng. D.s were made at the end of the Early Iron Age, but most are derived in inspiration from the well-known Rom. frontier works of Hadrian's Wall and the Antonine Wall, and are products of the Dark Ages. The best known in Britain is Offa's D. (q.v.), but the Devil's D. on Newmarket Heath is exceptionally well preserved, and Bokerley D., Wansdyke, and the Cambs D.s are

all worthy of notice. A few D.s, viz. Car D., in Cambs, the Foss D. between the Witham at Lincoln and the Trent at Torksey, and the D. between Peterborough and Lincoln, are thought to be Rom. canals, but only the Car D. has been proved by archaeological excavation, to be so. See Sir Cyril Fox, *Antiquity*, III, 1929, for a general account. See also EARTHWORKS.

Dyke Acland, Sir Henry Wentworth, see ACLAND.

Dykes, John Bacchus (1823-76), church composer; graduated at Cambridge, and became minor canon and precentor of Durham in 1849, Doctor of Music in 1861, and vicar of St Oswalds, Durham, 1862. As joint-editor of *Hymns Ancient and Modern* he wrote for that compilation some of its best-known tunes, e.g. 'Jesus, lover of my soul'; sev. of his anthems and services also attained great popularity.

Dykes are wall-like masses of igneous rock which fill up more or less vertical fissures in the earth's crust, and are so called from the Scottish word for wall.



DYKE

- a. Igneous rock forcing its way in overlying stratified rocks. When this solidifies in the cracks igneous dykes are formed.
- b. A dome of lava solidified before coming to surface—a laccolith

The 2 main characteristics of D. are: (1) they are bounded by more or less parallel surfaces and are of nearly constant width; (2) they are generally vertical at the time of intrusion. Some D. were injected in 'swarms' up parallel fissures formed by regional tensions in the crust of the earth. Others are related to volcanic centres, and the manner of their formation can be observed in the active volcanoes such as Vesuvius and Etna. Volcanic cones are fissured either by the hydrostatic pressure of the column of lava in the pipe, or by explosions due to the pressure of dissolved vapours and gases acting on the walls and roof of the funnel. Into the rents and fissures so formed the lava rises, forming D., veins, and horizontal sheets or sills. If the lava is extremely fluid, it ascends rapidly in the cracks and fissures and, cooling quickly on the outside but more slowly in the centre, forms D. with a vitreous edge and a crystalline interior. Since D. originate below the surface, they are only exposed to observation as the result of erosion. If the sedimentary strata, into which they have been injected, are more easily weathered than the igneous

material of the D., the latter stand up as vast walls, while where the igneous rock is more easily denuded the course of the D. is represented by a trench. As a general rule, D. run in straight lines, but may occasionally be zigzag. They vary in thickness from a few in. to 20 or 30 yds, and may be any length from a few ft up to 100 m. The Cleveland D. of the N. of England is 60 m. in length, and some of the Scottish D. are even longer. As well as forming a network in fissure eruption regions, as in Scotland, Iceland, and the Faroe Is., D. occur in the neighbourhood of large plutonic intrusions, such as granite bosses. These D. are finer grained than the granite from which they come, and may merge into mica porphyries, granophyres, and quartz-felsites. Where D. are intruded in the sedimentary strata, whether through fissures or along joint planes, the adjacent rocks are to some extent affected by the extremely high temp. of the igneous material. The rocks may occasionally be recrystallised, sandstones being altered to semi-crystalline quartzites, and limestones converted into crystalline marbles; more often, however, they are only baked or indurated, as when soft clays are metamorphosed to flinty shales, lydian-stone, or porcelanite (see METAMORPHISM). Regarded petrographically, D. belong to the phase 'Minor Intrusions' (sometimes called the dyke-phase). See IGNEOUS ROCKS; VOLCANOES, etc.

Dykh-Tau, 3rd highest mt in the Caucasus, in the main Caucasian range, 17,190 ft.

Dymoke, Eng. family holding the right of hereditary championship to the crown. Their representative formerly had to appear at the coronation banquet and challenge all comers to dispute the king's title. This office is held by tenure of 'grand serjeanty' in connection with the manor of Scrivelsby, Lincs, which passed to Sir John D. (14th cent.) by his marriage with the heiress of the Marmions.

Dynamic Frame, see CINEMATOGRAPH (THE SCREEN).

Dynamic Isomerism, see TAUTOMERISM.

Dynamical Units, see PHYSICAL UNITS.

Dynamics (Gk *dynamis*, strength, force), the science of motion, a branch of mechanics devoted to all problems of motion, as opposed to *Statics* that deals with problems of bodies in equilibrium or at rest. D. depends on 3 laws, called Newton's laws of motion. These state: (1) every body continues in a state or rest, or of uniform motion in a straight line, except in so far as it may be compelled by impressed force to change that state; (2) change of momentum is directly proportional to the impressed force, and takes place in the direction in which the force acts; (3) to every action there is always an equal and opposite reaction, viz. if a body A exerts a force on a body B, then simultaneously the body B exerts an equal and opposite force on the body A. On these 3 laws depends all our knowledge of motion of terrestrial and heavenly bodies. Einstein's theory of relativity has shown that in certain very special

problems the system of mechanics based on Newton's laws fails to account for the quantitative results obtained. The science of D. was begun by Galileo at the end of the 16th cent., when he studied the motion of falling bodies and disproved the Aristotelian idea that the speed of a falling body depended on its weight. Galileo, Huyghens, and especially Newton laid the foundations of the subject, which was further developed by continental mathematicians in the 18th cent., and subsequently by numerous other mathematicians and scientists. See S. Loney, *Elements of Statics and Dynamics*, Part 2, 1906; 1953; H. Lamb, *Dynamics*, 1926; E. T. Whittaker, *A Treatise on the Analytical Dynamics of Particles and Rigid Bodies*, 1937; S. Goldstein (ed.), *Modern Developments in Fluid Dynamics*, 1938; M. Davidson, *Introduction to Dynamics*, 1948. See also MECHANICS, KINETICS, and separate articles on individuals.

Dynamite, explosive consisting of some absorbent material impregnated with nitro-glycerine. Nitro-glycerine, which was discovered by Sobrero in 1846, although a powerful explosive, was early recognised as too sensitive and dangerous to be used as such, and in 1863 Alfred Nobel commenced experiments with absorbent substances with a view to arriving at a solid or plastic explosive with nitro-glycerine as its active constituent, which would be safer to handle. He was only moderately successful until he applied the method of causing explosion by detonation with mercury fulminate. He finally fixed on a siliceous earth known as kieselguhr (q.v.) as the absorbent best suited for the purpose. Kieselguhr, or guhr, is composed of the fossilised remains of diatoms, and consists of silica to the extent of about 95 per cent. It is found in Austria, Germany, Norway, Scotland, and Australia. It has the advantages of being itself inert and non-combustible, and of being capable of absorbing 3 times its weight of nitro-glycerine. The kieselguhr is prepared by calcination at low red heat in which moisture and organic substances are removed. The guhr is usually pink at this stage, owing to the presence of iron; if not, red ochre is added. Magnesium carbonate or calcium carbonate up to 2 per cent is then ground in. (These carbonates serve to neutralise any acid subsequently formed if the nitro-glycerine decomposes during the lapse of time before the D. is used.) The well-ground mixture is then sifted through a 30-mesh sieve. The guhr is weighed out into lined rubber bags, 3 parts of nitro-glycerine are added for every part of guhr, and the mixture is thoroughly completed by hand, after which the product is compressed into cartridge form; all precautions are taken to avoid friction. The D. is then wrapped in waterproof paper. D. is a greasy plastic solid of sp. gr. 1.59 to 1.65. It burns quietly when ignited, but may be exploded by a fairly vigorous percussion. It explodes with great rapidity, requires very little tamping, and has great shattering power if simply laid upon the ground. This has given rise to the saying

that 'dynamite explodes downwards,' as a hole is torn in the ground even when it is unconfined in other directions. It loses only one-sixth of its power under water, so is well adapted for subaqueous operations. It freezes at 40° F., and when frozen is difficult to explode. The operation of thawing D. is attended with some danger, and should only be performed when the rise of temp. can be carefully regulated. D. is used chiefly for blasting (q.v.). Its shattering power is too great for quarry work generally, but is effective for breaking up huge boulders and roots of trees, and for destroying obstacles to navigation under water. The rapidity of explosion renders its use as a propellant impossible. There are many modifications of the D. made with kieselguhr. One of these is blasting gelatine, where the nitro-glycerine is incorporated with collodion cotton, forming a gelatinous plastic material which is unaffected by damp. In order to prevent D. from freezing, the addition of such compounds as monochlorodinitrolycerin or glycerin dinitrate has been suggested. See EXPLOSIVES; and A. Marshall, *Explosives*, 1917-32; J. Keilly, *Explosives, Matches, and Fireworks*, 1938.

Dynamo, a d.c. generator, see ELECTRIC MACHINES.

Dynamometer, an instrument used for the measurement of force or power developed in machinery. A brake or absorption D. absorbs energy in frictional resistance. The instrument measures this absorption and so affords a method of obtaining the rate at which the machine is doing work on the brake. A transmission D. transmits the power measured without any absorption of energy.

Dyne, unit of force in the centimetre-gramme-second (C.G.S.) system. It is defined as the force required to produce an acceleration of 1 centimetre per sec. per sec. in a mass of 1 gramme. Such a force acting for 1 sec. on a mass of 1 gramme would therefore produce a change of velocity of 1 centimetre per sec. in the direction of the force. See METROLOGY.

Dyrrhachium, see DURAZZO.

Dysart, see KIRKCALDY.

Dysentery (Gk *dus*, bad; *enteron*, intestine), a group of infectious inflammatory diseases of the large intestine, characterised by the formation of ulcers and the consequent evacuation of blood and shreds of tissue. The disease is largely tropical but is more common in temperate climates than is generally supposed. It was a serious disease in the First and Second World Wars. There are 2 main types: *amoebic D.*, caused by the presence of a protozoan, *Amoeba dysenteriae*, and *bacillary D.* The bacilli associated with bacillary D. are the *Bacillus dysenteriae Shiga*, the *B. paradyenteriae Flemer*, and the *B. dysenteriae Sonne*. The latter often produces a simple diarrhoea rather than a true dysenteric condition.

The onset of bacillary D. is accompanied by general illness and diarrhoea. The desire to evacuate is particularly distressing and the discharge is often

scanty in amount. The evacuations are at first slimy, then blood-streaked, and if the disease is not checked ultimately consist almost wholly of blood and shreds from the lining of the large intestine. The ulceration gradually spreads until the greater part of the organ is affected. Occasionally the ulcers perforate the intestine, and death is likely to result from haemorrhage or peritonitis. Febrile symptoms become intensified, it is difficult to satisfy thirst, and the patient becomes greatly exhausted. Gangrenous matter may appear in the evacuation. Convalescence is protracted, and the disease may persist in a chronic form for years, as the injury to the tissues of the colon is usually extensive. Infection in bacillary D. results from swallowing the causative organism. Contaminated food is more often responsible than contaminated water, and the source is usually an acute case and not a carrier. Infection may be conveyed by flies. Protection of food, good sanitation, and anti-fly campaigns are important in the prevention of the disease. In treatment copious fluids are essential. Fortunately the sulphonamide compounds have a specific action on the D. bacillus, and sulphaguanidine is the one most used. The effect of sulphonamide treatment is dramatic and with good fortune the patient may be well in a few days. In cases in which specific treatment has not been started early, the powerful toxin secreted by the Shiga bacillus may produce symptoms of severe toxæmia. It can be countered by the administration of concentrated antitoxin.

In contrast to bacillary D., amoebic D. is essentially a subacute or chronic disease with an insidious onset. In certain circumstances, and in the presence of complications, it may, however, become acute. The primary cause is the protozoan *Entamoeba histolytica*. It is world wide in distribution and yet the disease is common only in tropical or subtropical countries. The parasite, which is found in man and a few other mammals, is transmitted from one host to another in the form of resistant cysts which are passed in the stools. The amoeba takes up its abode in the large intestine, more often near the caecal end. It causes small, flask-shaped ulcers which increase in size until they may be an inch in diameter, and in depth until they may perforate the bowel. Abdominal discomfort, a grumbling pain, and flatulence with a moderate degree of diarrhoea are the usual symptoms of amoebic D. The stools are semi-solid and offensive. Amoeba from an ulcer may penetrate a vein and be conveyed to the liver, setting up an amoebic hepatitis (q.v.). This may develop into an amoebic abscess. Emetine, a derivative of ipecacuanha, is the main specific treatment for amoebic D. Lately various antibiotics, notably bacitracin, aureomycin and terramycin, have been used with some success. See article by J. S. K. Boyd, *British Medical Journal*, 1951, 1, 1440; Manson's *Tropical Diseases* (14th ed.), 1954.

Dysmenorrhoea, see MENSTRUATION.

Dysodyle, yellow, greyish, or greenish mineral substance found in Sicily. It is bituminous, and burns vividly, with a disagreeable smell. It is laminated in structure, and often contains fossil fishes and plants.

Dyson, Sir Frank Watson (1868-1939), astronomer royal, Greenwich Observatory, from 1910 to 1933; b. Ashby-de-la-Zouch. He was educ. at Bradford Grammar School and at Trinity College, Cambridge—where he was Second Wrangler and Smith's Prizeman, also winning the Isaac Newton studentship. He was chief assistant at the Royal Observatory, Greenwich, 1894-1905, and secretary to the Royal Astronomical Society, 1899-1905; in the latter year he was appointed astronomer royal for Scotland. He became F.R.S. in 1901, and contributed many papers to the society's *Transactions*. Under his direction radio-time signals were first broadcast from Rugby, and in 1924 the 6-pip signal of the B.B.C. was adopted. Besides official pubs. he wrote *Astronomy: a Handy Manual*, 1910, and (with R. Woolley) *Eclipses of the Sun and Moon*, 1937. Knighted 1915.

Dyspepsia (Gk *dys-*, badly; *peptin*, to digest), functional derangement of the digestive processes. The cause may be localised in the digestive organs, and may be either some temporary derangement of function or some organic disease. Alternatively D. may be a symptom of some systemic disease. The nervous system has an effect on digestion, and excitement, worry, or anxiety may interfere with the digestive processes.

Dysprosium, metal belonging to the 'rare earths' (q.v.). It was discovered in 1886 by Lecoq de Boisbaudran. Its symbol is Dy, its atomic number 66, and its atomic weight 161.2 ($H = 1$) or 162.5 ($O = 16$). D. oxide is a white solid. D. occurs naturally in the minerals euxenite, fergusonite, xenotime, polycrase and gadolinite, etc. Chemically, it is related to erbium, holmium and thulium.

Dytiscidae, or true water-beetles, are coleopterous insects with bare 11-segmented antennae, and hind legs capable of swimming only. The perfect insect is purely aquatic, though it can fly from one pond to another; the larva is also aquatic, but before changing into a pupa it comes to earth and buries itself; and the pupa is wholly terrestrial. The beetle can live for sev. min. in a submerged state, but it is obliged to come to the surface for air; this it does up in air-tubes under its elytra, or wingcases, which fit tightly to its body. It is an active creature, carnivorous of habit; it grasps the prey with its legs and then feeds by its toothed jaws, or mandibles. The larva has hollow, curved mandibles which are used for piercing the prey and sucking the juices from it swiftly and fiercely. The males are frequently found in the mating position attached to the females by suckers on their fore-feet. There are nearly 2000 species of this family already known inhabiting water of cooler parts of the world, and among the chief genera are *Dytiscus*,

Cyblister, *Actinus*, and *Hydroporus*. Related families are the Gyrinidae (whirligig beetles) and the Hydrophilidae.

Dzaisang, see ZAYSAN.

Dzauzhikau, see ORDZHONIKIDZE.

Dzerzhinsk (before 1917 Chernorech'ye, then until 1929 Rastyapino), tn in Gor'kiy oblast, of central Russia, on R. Oka 20 m. W. of Gor'kiy. It is one of the main chemical industry centres in Russia (synthetic ammoniac, fertilisers, explosives). Originally a holiday resort, it has been a tn since 1929; industrial development started before 1917, and was particularly rapid during the 1930's. Pop. (1956) 147,000 (1926, 10,000; 1939, 103,000).

Dzerzhinskiy (Polish *Dzierzynski*), **Feliks Edmundovich** (1877-1926), Russian Communist, by birth and upbringing belonging to the Polish gentry. In 1895 he joined the Social Democratic party of Poland and Lithuania, which later developed Bolshevik leanings. He was sev. times imprisoned and banished to Siberia. Released from prison by the Feb. revolution in 1917, he became a central committee member of the Bolshevik party. D. played an active part in the seizure of power and immediately afterwards set up the Cheka (q.v.). He remained chairman of the Cheka and later the G.P.U. (q.v.) until his death. At the same time he was Commissar (Minister) of Transport from 1921 and chairman of the Supreme Council of National Economy from 1924; in the latter year he became candidate member of the Politburo (q.v.). In the inner-party struggle after Lenin's death he supported Stalin.

Dzhalal-Abad, oblast (prov.) of the Kirgiz S.S.R., Soviet Central Asia, in the Tien-Shan mts. Pop. 225,000.

Dzhambul: 1. Oblast (prov.) of Kazakh S.S.R. of Soviet Union. Important area for cultivation of sugar beet, cotton, wheat, rice, and tobacco. Pop. 540,000.

2. Tn. cap. of oblast, formerly Auliye-Ata, one of the oldest tns in Kazakhstan. It is the centre of a sugar-beet and orchard area; it manufs. phosphate fertiliser and has sugar refining, fruit canning, metalworking, and distilling industries. Pop. (1939) 62,723.

Dzhezkazgan, tn and copper mining and refining centre in Karaganda oblast (prov.) of the Kazakh S.S.R. of the Soviet Union. Pop. 40,000.

Dzhugashvili, see STALIN.

Dzierzynski, see DZERZHINSKIY.

Dzungaria, or **Zungaria**, **Basin**, the largest oasis of Sinkiang, China, bordering on Russian Turkestan, and lying between the Tien-Shan on the S., the Greater Altai on the N., and the Mongolian Gobi on the E. The surface is mainly a desert and slightly hollowed plateau, but there are large tracts of forest, and the plains and valleys afford good pasturage, while cereals are grown in parts. There are numerous mt streams, but the only important rivs. are the Black Irtysh and the Ili. The minerals include gold, copper, iron, and salt. Oil was discovered in 1954, and large-scale production began in 1956. The country was conquered by the Chinese emperor in the 18th cent. The inhab. include the Kalmuck Dzungars and Turgots, and also Khalkas and Dungans, Chinese, and Kirghiz.

E

E: 1. Fifth letter of the Eng. alphabet, was originally (i.e. in the Semitic alphabet) a consonant, having the phonetic value of *h*, and was called *he*. When the Greeks took over the Semitic alphabet, *he* became *epsilon*; in some varieties of the Gk alphabet it was adopted to represent the short *e*, while the Semitic *heth* was adopted to denote the long *e* or *ēta*. (In other Gk alphabets, *epsilon* was adopted both for the long and the short *e*.) The Etruscan and the Lat. alphabets used the letter *E* for the sound *e* as in 'men' or 'prey' and made no distinction between long and short vowel. *E* is the most frequently used of all the Eng. letters. Its phonetic value, however, varies: the long *e* (as in 'me') agrees with the continental *i*; the short *e* (as in 'men') and the open and long *e* (as in 'prey') agree with the continental *e*; whereas as a final letter it is usually silent (as in 'table').

In the calendar *E* is the 5th of the Dominical letters. See ALPHABET.

2. In music, the 3rd note in the scale of *C* major. Its own major key has 4 sharps, its minor key 1 sharp.

Ea, a prin. deity in the leading Assyro-Babylonian triad (with Anu and Enlil, qq.v.). He was god of the deep ocean and underworld waters. Particularly favourable to man, he warns him of the coming Deluge and instructs him in the wisdom of the gods. In the later role he is the Oannes of Berossus (3rd cent. bc) and the god of exorcism. *E*. was the father of Marduk (q.v.), the champion of mankind and of Babylon. His main shrine was at Eridu (q.v.) (modern Abu Shahrain) by the Persian Gulf.

Edgar the Peaceable, see EDGAR.

Edmer (or **Edmer**) of **Canterbury** (c. 1064-1124), historian and monk, friend and chaplain of St Anselm. He was elected bishop of St Andrews in 1120, but as there was controversy between Canterbury and York about jurisdiction over the see, while the Scottish king maintained his independence of either, *E*. was never consecrated. His chief works were: *Historia Novorum*, 1060-1122 (first printed 1623), and *Vita Anselmi* (pub. 1551), both in the Benedictine ed. of Anselm's *Works*, 1721. *M*. Rule's ed. in the *Rolls* series appeared in 1884.

Eads, James Buchanan (1820-87), Amer. engineer and inventor, granted a gov. contract (1861) for constructing a fleet of ironclads for use on the Mississippi. With these the capture of Fort Henry was effected during the Civil war. *E*. constructed the steel arch bridge at St Louis (1867-74), and undertook to deepen the Mississippi's channel by means of jetties. He also planned a ship-railway across Tehuantepec isthmus, but his project was not carried out. See F. D. How, *J. B. Eads*, 1900.

Eagle: 1. Military standard of the Roms. and earlier nations. The Persians, in the time of Cyrus the Younger (5th cent. bc), carried an *E*. on a spear as their standard. The Rom. *E*. was of silver, bronze, or gold, with wings extended. It was carried on the top of a spear, with a cross-bar supporting it. Some held thunderbolts in their talons. Napoleon's armies had a similar standard (1804). A number of Brit. regiments which captured Fr. *E*s during the Napoleonic wars incorporate these in their badges. As an armorial bearing the Imperial *E*. was adopted by the Holy Rom. empire, and at various periods in their history by Austria, France, Germany, Russia, U.S.A., and Poland.



Arthur Brook

GOLDEN EAGLE AND YOUNG

2. Term employed in speaking of many species of Accipitridae in the sub-family Aquilinae. They occur in all parts of the world, usually building eyries in forests or on mts, and all are fierce and powerful birds of prey. The species described in mythology and art belonged to the genus *Aquila*, but it is not known from actual specimens. *A. chrysaetos*, the golden *E*., is a large and fiercely predaceous bird rarely found in Britain, though it has been known to breed in remote parts of Scotland. Its nest or eyrie is usually built on cliffs or mts. *A. naevia*, the spotted or screaming *E*., occurs in N. Europe. The sea-*E*s are represented by the genera *Haliaetus* and *Thalassaeetus*; the hawk-*E*s by *Spizaeetus* and *Limnaetus*; the fishing *E*s by *Pandion*; the harrier-*E*s by *Circus*. The erne or white-tailed sea-*E*. *Haliaetus albicilla* ceased to breed in Britain only in comparatively recent years. The *E*. has been adopted by various nations as a symbol of power,

e.g. by Germany (for a time), or, again, as exemplified in the Bible (Ezek. xvii.), or as an emblem of nobility and generosity; while in Christian art it typifies contemplation and is the symbol of St John the evangelist. In the Bible, the Heb. term *nesher* equivalent to Gk *etos*, like the Arabic *niser*, denotes sev. birds of prey. Probably the griffon vulture is most often intended. It has no true feathers on head and neck, hence the phrase 'enlarge thy baldness as the E.' (Mic. i. 16). This bird abounds in Palestine, making its nests in the high cliffs overlooking the valleys (Jer. xlix. 16). The E. is noted for the telescopic range of its vision, and espies its prey from immense distances, while its flight seems to be watched by many other birds that follow to feast upon the carrion (Matt. xxiv. 28). There is an allusion in Ps. ciii to the anct belief that the E. was able to renew its youth. In the Middle Ages it was believed that every 10 years the E. beat its way upward high into the sun, whence, plunging into the sea, its old plumage was shed for new, and its youth was restored. See *under* separate headings for descriptions of species.

Eagle-hawk, see HAWK-EAGLE.

Eagle-owl, or *Bubo*, genus of the family Strigidae, which is represented in all parts of the world but Australia.

Eagle Pass, tn of SW. Texas, U.S.A., on the Rio Grande, in an agric. and coal-producing dist. Pop. 7300.

Eagle-wood, see ALOES-WOOD.

Eaglehawk, municipal bor. of Bendigo co., Victoria, Australia. 4 m. from Bendigo, and 105 m. from Melbourne; noted for fine gold mines. Pop. 5000.

Eagre, see BORE.

Eakins, Thomas (1844-1916), Amer. painter, b. Philadelphia, Pennsylvania. He studied art in Paris under J. L. Gérôme at the École des Beaux-Arts, and under Léon Bonnat. He also worked in the studio of Dumont, the sculptor. In America he was prof. of and lecturer on anatomy and painting in various schools of art, and assisted his pupil, Samuel Murray, to model the colossal figures of the Prophets on the Witherspoon Building at Philadelphia; he modelled 2 reliefs on the Trenton battle monument, also the horses ridden by Grant and Lincoln on the Soldiers' and Sailors' Monument at Brooklyn. He painted the Crucifixion in Overbrook Seminary, and a portrait of Cardinal Martinelli. A realistic painter, he has been called 'the American Courbet'.

Ealdhelm, see ALDHELM.

Ealdred, see ALDRED.

Ealing, municipal bor. of Middx, England, 7 m. W. of Charing Cross. It was created in 1901, the first of the modern bors. of the co., and includes Northolt (q.v.). Hanwell, Greenford, Perivale, and the residential part of West Twyford. It is nearly certain that E. was settled by Saxons as early as the mid-6th cent., and it remained a vil. until the early 19th cent., but is now the centre of a populous London suburb and industrial dist. At Hanwell the Brunel Viaduct forms a well-known landmark. Perivale has the smallest church in the co., mainly a 13th-

cent. building with a 16th-cent. weather-boarded tower; Greenford, once an area of open fields, is now largely industrial. The industries of E. include the manuf. of glass bottles, infant foods, pharmaceutical products, electrical goods, oil heaters, and vacuum cleaners; here also were the E. Film Studios. Pop. 185,000.

E. A. M. (Ellinikon Apelevtherotikon Metopon), a Gk resistance movement or 'National Liberation Front' in Second World War. See GREECE.

Eames, Emma (1865-1952), Amer. prima donna, b. Shanghai, China; studied at Boston, Massachusetts, and Paris. Made her début in Paris in 1889, and first sang in London, at Covent Garden, in 1891.

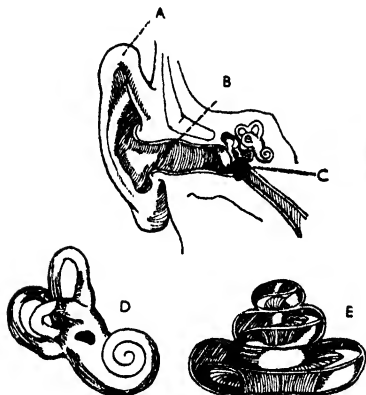
Ear. The E., the organ of hearing, is divisible into 3 parts: (a) the external; (b) the middle; (c) the internal. The most important portion is the internal E. or *labyrinth*; the other 2 can be considered merely as accessories to this, their function being the collection and transmission of the sound waves so that the sentient portion of the organ may be affected. The parts will be described from the exterior inwards. The external E. consists of 2 parts, the *pinna* and the *meatus*. The former is a broad, peculiarly shaped, and for the most part cartilaginous plate, concave on the whole, but thrown into various elevations and hollows to which distinct names have been given, the largest and deepest hollow being the *concha*, which surrounds the entrance to the meatus. The variety of contour is to ensure that the sound waves collected within the rim of the pinna are reflected into the external auditory canal, somewhat similar to the action of the Whispering Gallery of St Paul's. The pinna is also used to ascertain the direction from which the sound is coming. The meatus, about 1½ in. in length, has an outer cartilaginous portion with many fine hairs and a large number of sebaceous glands which secrete *cerumen* or E. wax. The innermost half of the tube enters the temporal bone which encloses the middle and internal E. The meatus is first directed upwards and then, narrowing in diameter, surmounts a convexity in the floor of the osseous part to dip downwards and widen again to its termination at the obliquely placed *membrana tympani* or *drum*.

The middle E., or *tympanum*, is a narrow, irregular cavity varying in width from ½ in. to ⅓ in. between the tympanic membrane and the outer bony wall of the labyrinth. Its enclosed air is in direct communication with the pharynx (throat) by means of the Eustachian tube. This arrangement ensures that the cavity is kept supplied with renewed air at the same pressure as that of the external E. so that the drum is able to vibrate freely. It contains a chain of small bones which convey the vibrations across the cavity to the middle E. The *membrana tympani* is an ellipsoidal disc about 0.37 in. by 0.33 in., and about ⅛ in. thick. To its inner surface is attached the handle of the 1st bone (the *malleus*, or hammer), the

rounded head of which fits into a corresponding hollow in the 2nd bone (*incus*, or anvil), and this in its turn articulates with the *stapes*, or stirrup, which fits into the *fenestra ovalis* of the internal E. The *fenestra rotunda* separates the *scala tympani* from the middle E. The complicated ligament and muscle attachments of the chain of bones ensure an exact reproduction at the *fenestra ovalis* of the highly complex movement of the tympanic membrane.

The internal E. is contained in the petrous portion of the temporal bone and consists of a complex cavity, the *osseous*

auditory epithelium, which contains distributed filaments of the auditory nerve. The *cochlea* (Lat. a small shell, from its spiral shape) appears in the form of a blunt cone about $\frac{1}{2}$ in. in height and the same in breadth at the base. It consists of a gradually tapering spiral tube of $2\frac{1}{2}$ turns and some $1\frac{1}{2}$ in. in length, the inner wall of which is formed by a central column, or *modiolus*, from which projects a spiral lamina along the whole extent of the cochlea. The membranous labyrinth consists of structures lined throughout by epithelium, and at certain parts receives branches of the auditory nerve. In the vestibule and canals the structures have a general resemblance in form to the complicated cavity in which they are contained. They do not, however, lie loose within the osseous labyrinth, but along the convex border of the canals, and at the places of entrance of the nerves into the vestibule and ampullae they are fixed to its walls. In the cochlea the membranous structures complete the septum and enclose an intermediate cavity. In the osseous vestibule there are 2 membranous sacs: (a) the *utricle* (Lat. *utriculus*, a small bladder), connected with the canals, and (b) the *sacculus*, connected with the cochlea; these sacs are only in indirect communication with one another. Both contain small masses of calcareous particles (*otoliths*) which are set in movement by vibrations, and they also contain patches of auditory epithelium with nerve filaments. The cavity of the osseous cochlea is divided into 3 distinct parts, *scala vestibuli*, *scala tympani*, and *canalis cochleae*, by means of 2 membranes: (a) the *basilar*, and (b) the more delicate *membrane of Reissner*, the oblique dissection of which latter causes the smallest portion, the cochlear canal, to have a triangular section; this is in communication with the sacculus and contains endolymph, whereas the other 2 scalae contain perilymph. The cochlear canal is highly complicated, and only a brief description is possible here. The most important structure of the floor of the cochlear canal, that is, on the basilar membrane, is the so-called organ of Corti, which consists of the rods of Corti. There is an inner row and an outer row all along the spiral, each row containing sev. thousand rods. Flanking the rods are rows of cells (sev. thousands in each row), each cell bearing short hairs on its free surface, and the auditory nerves passing through the lamina spiralis reach the cochlear tube along the whole length of the spiral and end in filaments which are lost in the organ of Corti, but are probably connected with the hair cells. It is thought that the cochlea distinguishes pitch and timbre in notes. What takes place in hearing may be summarised thus: The vibrations set up by a sounding body are conducted by the accessory apparatus to the perilymph through the membranous sac, thence to the endolymph. The vibrations in time reach those particular places containing auditory epithelium, and set the auditory hairs or the otoliths in movement, and so excite the delicate filaments below, which



PARTS OF THE EAR

A, pinna; B, meatus; C, eustachian tube; D, cochlea and semi-circular canals; E, section of cochlea.

labyrinth (auditory capsule), hollowed out of the bone and containing the *membranous labyrinth*. The former is incompletely divided into 3 parts, viz. the *vestibule*, the *semicircular canals*, and the *cochlea*; the membranous labyrinth is smaller, and the space between the two is occupied by *perilymph*, while *endolymph* is contained in the inner labyrinth. The vestibule forms the central chamber of the labyrinth and communicates in front, by means of a large opening, with the cochlea, and behind, by means of 5 smaller openings, with the semicircular canals; its outer wall is penetrated by the *fenestra ovalis* mentioned above. The semicircular canals are 3 tubes differing from one another in direction, length, and position with regard to the vestibule; they are arranged in 3 planes mutually at right angles, and they are of the greatest importance in the guidance of co-ordinated movement so that bodily equilibrium may be maintained. Each canal is about $\frac{3}{8}$ in. wide, but each is dilated at one end forming an *ampulla* about $\frac{1}{4}$ in. in diameter, and on each ampulla is a crest or ridge (*crista acustica*) projecting into the cavity of the canal and consisting of

causes impulses to pass along the auditory nerve to the brain.

Deafness and diseases of the ear.—The most common affection of the E. is deafness, which is of various types. An impacted plug of wax will cause it, and should be removed by syringing, which however must be carried out with care. It is best to drop a few drops of hydrogen peroxide or liquid paraffin into the E. for 2 or 3 nights before syringing, in order to soften the wax. A *furuncle* or boil in the meatus may also cause deafness, but the chief symptom is severe throbbing pain. By far the greater number of cases of deafness, however, are caused by affections such as catarrh of the middle E. or Eustachian tube, which, if not properly treated at an early stage, may proceed to chronic catarrh. *Adenoids* (q.v.) are a common cause of deafness among children. *Otosclerosis* also brings middle-E. deafness, and is due to obscure changes in the bony labyrinth, but unhappily neither its cause nor cure is known. *Nerve-deafness* is due to an affection of the cochlea or the acoustic nerve. Other diseases include *otitis media*, or inflammation of the middle E.; this may be associated with one of the infectious diseases, particularly measles (q.v.) and scarlet fever (q.v.), or with tonsillitis, the bacterial infection spreading up the Eustachian tube. *Otitis media* commonly leads to abscess formation, unless checked in its early stages by antibiotic treatment, and the abscess is drained by an incision through the tympanic membrane. This operation is known as myringotomy. Otorrhoea, or chronic suppurative infection of the middle E., may follow acute *otitis media*. It causes a chronic offensive discharge and the condition is difficult to cure. Infection of the mastoid air cells, or *mastoiditis*, may follow acute *otitis media*. Abscess formation must be treated by surgical drainage. *Vertigo* is a distressing symptom in which the patient feels or sees movement when, in fact, no movement has occurred. It is accompanied by a disturbance of balance which causes the sufferer to clutch a support and, in severe cases, may throw him to the ground. It may even occur at rest. Vague disturbances of balance without any sensation of movement are not true vertigo. In most cases vertigo is due to a loss of function of the vestibular system of the inner E., either in the labyrinth or the 8th cranial, or auditory, nerve. The symptoms of vertigo are most severe when loss of function is sudden and affects one side only. In cases of gradual onset the nervous system develops alternative means of maintaining balance, and loss of function is not so noticeable. Acute cases may be accompanied by collapse and vomiting. The loss of vestibular function may be temporary, as in the overstimulation of the end-organs in the labyrinth in motion sickness, or may be due to permanent damage from injury or disease. Damage to the vestibular nerve connections may occur from a cerebral haemorrhage or a tumour or disease of the nervous system. Or the lesion may be in the

labyrinth itself. When the lesion is in the labyrinth the condition is known as Ménière's disease. Labyrinthine lesions may occur from head injury, such as a fractured skull; from infections secondary to *otitis media* or meningitis (q.v.); and from the effects of toxins. One of the antibiotics, streptomycin, has a selective toxic action on the labyrinth in some people. An obstructive distension of the endolymph of unknown cause is responsible for labyrinthine vertigo in other cases. Treatment consists in treating the cause where possible. Sedative drugs help in the acute attack.

Ear-ring, strictly a ring worn as an ornament suspended from the lobe of the ear, which is pierced for the purpose. The custom of wearing E.s has existed among the Orientals from the earliest times. It was common to both sexes among the Asiatic races (Persians, Babylonians, and Carthaginians), but reserved for women only among the Greeks and Romans. In Elizabethan times in England E.s were still worn by men, and sailors sometimes continue the custom. This form of jewellery has for long been highly fashionable and popular among women all over the world. The 2 chief kinds are a jewelled stud fitting closely to the lobe, or a drop or pendant hanging from a gold loop. In costume jewellery many thousands of different patterns are produced.

Ear-shell, gastropod mollusc of genus *Helix* sometimes called ormer. The shell is ear-shaped.

Ear Stones, see OTOLITHS.

Ear-wax, see CERUMEN.

Earheart, Amelia (Mrs G. Palmer Putnam) (1898–1937), Amer. social services worker and air-woman, b. Atchison, Kansas. She was the first woman to fly the N. Atlantic, flying as a passenger from Newfoundland to Burry Port, Wales, in 1928. She served with the Red Cross during the First World War and subsequently directed a social service centre in Boston; flew from Newfoundland to Ireland in 13½ hrs, 1932; and made the first solo flight from Honolulu to Oakland, California, doing the journey in 18½ hrs, in 1935. In July 1937, when attempting a flight round the world, she was lost at sea with her navigator, Capt. Noonan, near Howland Is.

Earl, title of Brit. nobility, between a marquess and a viscount. It was during the Norman period that earldoms first became hereditary, and for some time E.s were called counts, and their wives at the present day are called countesses. The title of E. was the highest hereditary dignity until the reign of Edward III, who created his eldest son 'Duke' of Cornwall, 1337. The eldest son of an E. bears the title of 'viscount,' while the younger sons are styled 'honourable.' See also NOBILITY.

Earl Marshal of England. The king's M. (A.-S. *meath*, horse, *seale*, groom) early became one of the chief officers of state, and, under the Norman and Plantagenet kings, judge in the Courts of Chivalry. Since 1672 the office has been hereditary in the family of Howard

(dukes of Norfolk). The E. M. is now head of the Heralds' College through which he regulates all matters connected with armorial bearings, standards, etc., and controls the arrangements for state functions. In Scotland a similar dignity was hereditary in the family of Keith from the 14th cent. till 1716.

Earle, John: 1. (1601-65) Clergyman and essayist, b. York. Educ. at Oxford, where he was a Fellow of Merton, he took orders and became chaplain to Charles II. At the Restoration he was made dean of Westminster, in 1662 bishop of Worcester, and in 1663 bishop of Salisbury. Learned and eloquent, he was opposed to all forms of religious persecution, including the Conventicle and Five Mile Acts. As a writer, he is chiefly remembered for his *Microcosmographie*, or *A Piece of the World Discovered in Essays and Characters*, 1628, the best and most entertaining of all the once fashionable collections of 'characters.'

2. (1828 1903) Eng. philologist and clergyman, prof. of A.-S. at Oxford, 1849-54; re-elected, 1876. He became rector of Swanswick in 1857, prebendary of Wells (1871), and rural dean of Bath (1873-7). His works include: *Two of the Saxon Chronicles Parallel*, 1865; *A Book for the Beginner in Anglo-Saxon and The Philology of the English Tongue*, 1866; *Anglo-Saxon Literature*, 1884; *English Prose, its Elements, History, and Usage*, 1890; *The Psalter of 1539, 1894*; *A Simple Grammar of English now in Use*, 1898; *The Alfred Jewel*, 1901.

Earlestown, see NEWTON-LE-WILLOWS.

Earlom, Richard (1743-1822), mezzotint engraver, a pupil of Cipriani (q.v.). He was the first artist to make use of the point in mezzotint work. He engraved plates after Rembrandt, Van Dyck, Correggio, and others; the 6 after Hogarth's 'Marriage à la Mode' are well known. 'Fruit and Flowers,' after J. van Huysum, made his reputation, and 'Bathsheba leading Abishag to David' won much praise. His patron, Boydell, pub. the 'Liber Veritatis,' 1777, a series of mezzotints from the originals of Claude Lorraine.

Earls Barton, vil. of Northants, England, 4 m. SW. of Wellingborough. Its par. church has a noted Saxon tower dating from the late 10th cent. It is the centre of boot and shoe manufs. Pop. 3000.

Earl's Court, part of the bor. of Kensington, London, with a large hall used for exhibitions and entertainments.

Earlston, Erroldoune, or Erroldoune, par. and mkt tn of Berwickshire, Scotland, on Leader Water, 4 m. from Melrose. Ruins of an auct tower remain, the traditional abode of Thomas the Rhymer (13th cent.). Tweeds and other textiles are manufactured, and there are dye-works. Pop. 1700.

Early, Jubal Anderson (1816-94), Amer. confederate general, practised law from 1838 to 1861. He served in the Florida war (1837-8), and in Mexico (1847-8). In the Civil war he commanded a brigade at Bull Run (1862), and distinguished himself at Williamsburg, Antietam, Fred-

ericksburg, Chancellorsville, and Gettysburg, commanding part of Lee's army. After some successes in the Shenandoah Valley, he was defeated by Sheridan (1864), and by Custer at Waynesborough (1865). He wrote *A Memoir of the Last Year of the War for Independence in the Confederate States*, 1867. See G. Pond, *The Shenandoah Valley in 1864*, 1883. See also M. K. Rushong, *Old Jube*, 1955.

Early Closing. The movement for reducing the working hrs of shop assistants was inaugurated in 1842, since which year the compulsory weekly half-holiday, the introduction of 'summer time,' and other reforms have appreciably improved their conditions. The provisions of the Shops (Early Closing) Act, 1920-1, were permanently adopted in 1928. The act states that for only one day weekly may a shop remain open until 9 o'clock, and on the remaining evenings it must close no later than 8, although customers inside the doors before closing time or anyone requiring some article urgently in case of illness may be served. Exemptions are given in respect of exhibitions and seasons such as Christmas, while special provisions are made for holiday resorts and sea-fishing centres. The occupier of a shop breaking the law is liable to a maximum fine of £5 for a 1st offence, and £20 for any subsequent offence. A Shops Bill to amend the scale of working hrs went before Parliament in 1956, but its progress was suspended during 1957. See SHOPS ACTS.

Early English Text Society, founded in England by F. J. Furnivall (q.v.) in 1864 to bring unprinted early Eng. literature within the reach of students and lexicographers. During the last 90 years the Society has pub. more than 360 texts which range in date from the earliest A.-S. period to the 17th cent. These were drawn on heavily in the editing of the *Oxford English Dictionary*. Together these texts—among them being *Beowulf* (facsimile), *Piers Plowman*, Gower's *Confessio Amantis*, the Towneley and Chester cycles of mystery plays, 3 Tudor lives of Sir Thomas More, and many other works, religious and secular—form a collection invaluable for the scholar and the general reader.

Earn, loch of Perthshire, Scotland, about 6½ m. long by ½ m. broad, and about 300 ft deep. On the S. is Ben Vorlich, a mt. of 3224 ft, and Ardvorlich House is the 'Darnlinvarach' of Scott's *Legend of Montrose*. The riv. issues from the loch, flows E. through the well-wooded valley of Strathearn, past Comrie, Crieff, and Bridge of E. The E. finally joins the Tay near Abernethy, about 6 m. from Perth.

Earnest (Scottish *arles*), trifling sum of money or token given to 'bind the bargain' of a sale or agreement, marking the assent of both parties to a contract. A practice of great antiquity, it is still sometimes observed in England and Scotland. It is not quite the same as part payment, for in the case of E. proper, or 'dead E.', no allowance is made later for the value of the token given beforehand by the purchaser.

Earth (O.E. *eorthe*), the planet on which we live. The term is also used to denote the solid portion of the globe, in particular the uppermost layer, consisting of disintegrated rock and organic particles loosely bound together, otherwise known as soil. The early chemists recognised 4 elements, fire, air, water, and E., of which all other substances were thought to be mixtures or modifications. In modern chem. the term persists as applied to certain metallic oxides. The older chemists gave the name E. to non-metallic substances which were insoluble in water and were not affected by high temps. As many of them had an alkaline reaction they were known as alkaline E.s, but subsequent investigations have shown that each such E. is a compound of a metal and oxygen. The term alkaline E. is now restricted to lime, strontia, and baryta, these being oxides of calcium, strontium, and barium. There is another extensive group of oxides known as the rare E.s (q.v.).

The Earth as planet.—The E. is a member of a group of bodies distinguished from other bodies in the universe by their motion around one member of the group, the sun. The central body, or sun, is the only member of the group, as far as we know, which shines by its own light. The other bodies consist of planets which move in elliptical orbits about the sun, and satellites which revolve around certain of the planets. The planets, in order of nearness to the sun, are Mercury, Venus, the E. with its satellite the moon, Mars, with 2 satellites; then come a vast number of minor planets or asteroids, and outside of these the larger planets, Jupiter, Saturn, Uranus, and Neptune, with 12, 9, 5, and 2 satellites respectively, and Pluto. The path of the E.'s motion round the sun, that is of its *revolution*, is an ellipse of which the sun forms one focus. The mean distance of the E. from the sun is about 93,000,000 m., and the eccentricity of the orbit is about 0.0167272. The plane of the orbit is called the ecliptic, and it is inclined to the E.'s equatorial plane at an angle of about $23\frac{1}{2}$ degrees. The time which the E. takes to make a complete circuit is known as the solar year, and measures 365 days 5 hrs 48 min. 46 sec. (see CALENDAR; CHRONOLOGY). The E. has another movement, rotating about its own axis, thus causing points on the E.'s surface to have periods of sunlight alternating with the periods of darkness. Owing to the inclination of the E.'s axis to the plane of the ecliptic, some places are presented to the rays of the sun more directly than others; this causes the phenomena of the seasons (q.v.). Also places in high lats. are presented for longer periods to the sun's rays according to the position of the E. in its orbit; this accounts for the variations in the lengths of day and night in those lats. The E. is nearly spherical in shape. The ancients believed it to be a flat disk, and the belief persisted in the popular mind for many centuries. Pythagoras, however, asserted that the E. was spherical and his view was strongly supported by Aristotle, who employed many of the arguments current

to-day. The horizon becomes more extensive as the position of a spectator becomes more elevated. The E. always throws a circular shadow on the moon when it is in eclipse, and the lower part of a receding object is the first to disappear. The E. is, however, not a perfect sphere. In the 17th cent. Jean Richer observed that a clock which kept perfect time in Paris lost about $2\frac{1}{2}$ min. a day at Cayenne, and the pendulum had to be shortened in order to correct the error. Newton explained the occurrence by showing that the attraction due to gravity was less at the equator than in more northerly lats. owing to an increased distance from the E.'s centre of gravity, and, in addition, centrifugal force due to the E.'s rotation diminishes from equator to poles, thus increasing the E.'s gravitational pull. This conclusion received confirmation by experiments with delicate spring balances, which registered less weight for a given mass in equatorial than in regions of higher lat. It was also observed that the length of a degree of lat. is greater towards the poles than near the equator. The degree is readily indicated with great accuracy by astronomical methods, and its length being determined by careful E. measurement showed beyond doubt that the E. is flattened at the poles. The amount of the flattening is not great, the extent by which the polar diameter is less than the mean equatorial diameter being about 1 298th part of its length. The equatorial section of the E. is also slightly elliptical. The length adopted of the polar diameter is 7900.09 m., and of the equatorial diameter 7926.70 m., giving a difference of 27 m. approximately. The mass of the E. is given by the most recent researches as 5,885,000,000,000,000,000 tons. The mean density of the E. is computed at about 5.5, the density of pure water at 4° C. being taken as unit. The planet E. is a great magnet. If a magnetic needle is placed upon a pivot so as to oscillate freely it takes up a position which is approximately N. and S. The N. and S. poles of the E. considered as a magnet are some distance from the poles of the rotatory axis and undergo secular variation of position. (For measurement of the E., see also METEOROLOGY and PHYSICAL CONSTANTS.)

Origin and history of the Earth.—No theory of the origin of the E. has been generally satisfactory. The nebular hypothesis, which was once in favour, states that the solar system was at one time a great nebulous mass which had a rotation and slowly contracted under its own gravitational pull. As the contraction increased, its angular velocity also increased in accordance with the well-known law of the conservation of angular momentum. Matter was ejected by the centrifugal force prevailing over the gravitational attraction, this matter forming rings which afterwards became the planets. These latter repeated the process on a small scale, their rotation condensing matter which afterwards condensed to form satellites. There is certainly abundant evidence that the E.

was at one time at a much higher temp. than to-day. The gradual rise of temp. on descending towards the E.'s interior suggests that the innermost regions are still at an enormously high temp. The existence of volcanoes which pour out molten rock and hot gases is taken by some as sufficient evidence that the interior is still in a fluid condition, and that the crust is a solidified envelope of comparatively little depth. Physical facts are against the likelihood of a permanent gaseous or molten interior, and some scientists say that the amount of radium in the E., indicated by the discoveries fairly near the surface, is sufficient to account for almost any degree of temp. Attempts have been made to compute from geological, physical, and other data the length of the period during which the E. has been in a solid state. Lord Kelvin based his hypotheses on arguments derived from consideration of 3 kinds of data. By judging the rate of the loss of heat from this planet, he placed the limits of not less than 20,000,000 years and not more than 400,000,000 years as the length of time from the first superficial solidification of the E. to its present condition. From the amount of retardation of the E.'s rotation due to tidal friction he judged that the E. became consolidated not much more than 100,000,000 years ago. Thirdly, by calculating the probable age of the sun's heat, he brought down his estimate of the age of the E. to about 20,000,000 years. Geologists, however, were disinclined to accept any period less than 100,000,000 years as sufficient for the elaboration of the present structure of the E. It is indisputable that some hundreds of millions of years must have elapsed while the great sedimentary rocks were being deposited. With respect to the larger features of the E.'s surface, it is likely that 2 different kinds of movement are responsible. Where the contraction of the E. has caused a lessening of the support below the surface, there has been a subsidence of great areas. Where the rigid crust has been able to contract into a smaller space, great ridges and folds have been formed, showing marked continuity and parallelism. The subsidences which caused the ocean appear to have taken place at different ages. The Atlantic Ocean probably dates from middle Cretaceous times; the Indian Ocean may be older; and the Pacific, whether a subsidence of great antiquity or not, has certainly suffered great modifications in comparatively recent times. Akin to the general discussion of the age of the E. is speculation concerning its future. The constant operation of tidal friction will cause it to rotate more and more slowly, and the gradual cooling of the sun itself will inevitably diminish the amount of heat received by the E. A time will come, many thousands of millions of years distant, when the members of the solar system will no longer receive sufficient heat from the sun to make conditions favourable for any form of life.

Structure of the Earth.—The E. consists of an outer gaseous envelope, the *atmo-*

sphere; a middle layer of water, the *hydrosphere*, occupying the hollows in the surface of the globe; and a central core of solid material, the *lithosphere*. In the course of its solidification, the lithosphere developed ridges, which are represented by the great mt ranges, and subsidences, which are represented by the great oceans. The progressive cooling had its consequence in stresses in various parts of the surface of the lithosphere which took effect in various movements, sudden occasionally, but long sustained for the most part, and so the general shape of the E. was and is constantly changing; in places the land is gradually lifted above the sea, while other lands are gradually submerged, only to reappear in a later age. There are other agencies at work tending to change the form of the E. The disintegrating forces of frost and water action gradually wear down the older rocks, while the deposition of the débris, mixed with relics of organised life, builds up layers of sedimentary rock. The oldest rocks, those of the Pre-Cambrian (q.v.) period, are believed to have been formed about 3,500,000,000 years ago (see GEOLOGY, *The Geological Method*). The study of the crust of the E. is the aim of the science of *Geology*. In *Geography*, the surface of the E. is considered: its div. into continent and ocean, the features of the land masses, mts, rivs., plateaux, plains, etc., the distribution of life on the globe, the manner in which the various sections of the human race have grouped themselves, the nature of their govts., their industries, their cities and tns, roads of communication, commerce, and markets. *Astronomy* deals with the E. as a planet, its movements, and the methods of accurately measuring them. The measuring of the surface of the E. is the concern of *Geodesy*. The constitution of the various rocks is dealt with in *Mineralogy* and *Chemistry*. The study of earthquakes (q.v.), of the physical conditions in the E.'s interior, as far as its centre, its density, magnetism, etc., is dealt with in *Geophysics*. The constitution and phenomena of the atmosphere are the business of *Meteorology* (q.v.). The hydrosphere is studied under the name of *Oceanography*. See OCEAN AND OCEANOGRAPHY.

See J. H. Poynting, *The Earth*, 1922; G. A. Bailell, *Evolution of the Earth*, 1929; V. A. Heiskanen, *On the Figure and Structure of the Earth*, 1941; T. A. Ryder, *Mother Earth*, 1948; Harold Jeffreys, *The Earth*, 3rd ed. 1952.

Earth-closet, privy that has a movable receptacle for faecal matter, the contents of which are deodorised by being covered with earth, ashes, or other material. E.s may be installed in lieu of water-C.s where there is not a sufficient water supply for the serving of water-C.s and a sewer is not available. The definition of an E. in the Public Health Act, 1936, is so framed as to include certain types of chemical closet.

Earth Colours, see PIGMENTS.

Earth Current. If 2 metal plates are sunk in the earth at some distance from each other, and then connected by a wire,

E. C.s flow from one plate to the other, and may be detected by a delicate galvanometer placed in the circuit. The potential difference between the plates may be as much as 20 millivolts per kilometre distance between them. This potential difference varies daily, and may cause serious interference with the transmission of messages. The telegraph lines running from N.E. to S.W. in England are the prin. sufferers from E. C.s. These C.s were discovered by Walker and Barlow in England in 1847 from measurements on telegraph lines. Strictly speaking the C.s caused by the following phenomena are not included under the title of E. C.: C.s from chemical activity of ores, and from local temp. differences, and surges due to lightning discharges. E. C.s are essentially pulsating or alternating C.s of relatively long periods, and no steady direct C. has been found. They are associated with M. C. storms, magnetic storms, movements of charge in the ionosphere, and sunspot activity.

Earth-house, or Yird-house, see SOUTHERN RAINS.

Earth-nut, see GROUND-NUT.

Earth-pillar, pillar of earth or soft rock capped by a large boulder or some harder material, such as sandstone or limestone. These columns are formed by the action of rain on a mass of soft, stony clay, or by the washing away of softer substances beneath cracks formed in the cap of rock. They occur in the moraines of glaciers, boulder-clay, and similar formations, and are from 30 to 100 ft high. Examples are found in the 'bad lands' of W. North America, in the 'Garden of the Gods,' in Colorado, and at Bolzano (Tyrol). There are also specimens at Fochabers in Scotland, and elsewhere.

Earth-shine, light reflected from the earth's sunlit surface to the moon, causing the dark parts of her surface to become slightly luminous (with a reddish tinge) for a few days before and after new moon. The appearance, popularly described as 'the old moon in the new moon's arms' (the whole surface being visible in ashy-coloured light), is a result of the E.

Earthenware, name used in England to denote objects made out of clay and baked hard, but not to the point of vitrification. (For the latter, see STONEWARE and PORCELAIN.)

TECHNIQUE. Although nowadays potters only use clay from a few favoured dists. with particularly fine clay, earlier potters used the local clay. The greatest invention in the hist. of E. is that of the potter's wheel, a contrivance which consists essentially of a dish or table revolving horizontally. The clay is thrown on the centre of the wheel and fashioned by the hand of the potter, aided by a few simple tools, into a symmetrical shape about the axis of the wheel. The clay is then put aside to dry and be worked more accurately by steel tools in a lathe; spouts, handles, etc., are moulded and attached to the body. The objects are placed in coarse E. containers called *saggars* and piled up in the kiln to be baked, often in 2 or more stages. The

baked but unglazed first stage is known as biscuit (q.v.). Coloured decoration is now added and made permanent by another firing. A glaze, either lead or salt, is added and made hard and transparent by firing.

HISTORY.—Ancient Britain.—E. was one of the features of the Neolithic revolution which started somewhere in the E. Mediterranean. The earliest forms are very simple, often with lugs for carrying. Sev. varieties are known in the Bronze Age but all are local products. With the introduction of the hand turntable or the wheel in the Early Iron Age, E. became to a certain extent an industry in Britain.

Egypt, Mesopotamia, etc.—The art of E. proceeded on parallel lines. Bricks made of sun-dried clay and straw were common at an early period. In Assyria they were glazed and used for decoration on important buildings, e.g. the frieze from the Achaemenid Palace at Susa, c. 500 BC (now in the Louvre). Baked clay tablets and cylinders were used for inscriptions and writings. The finest Egyptian E. is the vitreous alkaline glazed vases, bowls, etc., especially the turquoise blue glazed ware of 12th–18th dynasties. In Ptolemaic times the glaze is less opaque.

Crete.—Valuable E. discoveries were made in the 20th cent. Early Minoan ware consisted largely of pots made from coarse grey clay, which was hand-polished and decorated with incised lines, like the E. of 2500 BC from the Antiparas Is. A ripple design is found on Neolithic ware from Crete dating from before 3000 BC. In the Bronze Age, during the early Minoan period at Knossos, coloured baked clay was used and painted a dull black, which later was ornamented with white patterns. In the middle Minoan period the potter's wheel was probably introduced from Egypt. Light-coloured patterns on a dark ground (polychromeware) or dark patterns on the plain baked clay (monochrome ware) were made. Later Minoan ware includes egg-shell vases and designs in relief, and the large storage jars similar to those in use to-day. A change away from polychrome towards monochrome marks the late period, during which was discovered a durable black varnish, which was not a glaze. The E. is often covered with a brown-black glaze on a buff clay slip and the designs are naturalistic. There followed a rapid decline in quality.

Greece.—E. developed largely without influence from Egypt or Assyria until a late period. The most typical form of Gk E. is the vase, with its innumerable variations of shape and many uses. The earliest decoration is incised patterns. The Greeks used no glaze but a black and red 'gloss,' obtained by painting the partly dried pot with a fine suspension of clay containing iron. The E. was then fired and if kept from contact with the reducing gases resulted in the red, and if exposed to them resulted in black, terra sigillata (see SAMIAN WARE). From the 4th cent. Gk E. tends to be over-decorated and the drawing becomes careless.

Rome.—There was simple E. used for domestic purposes and there was the bright red glazed E. known as samian ware (q.v.). The latter is usually decorated with stamped, moulded or applied ornament, though simple incised patterns occur.

Asia.—High quality E. was made in Korea, often of a celadon green colour, and it is claimed that the Japanese learnt to make E. from the Koreans. In China, the discovery of hard-paste porcelain (q.v.) by the 7th cent. AD tended to replace E., except for the poor-quality objects of common use. Early Islamic E. of the 9th and 10th cents. was of a high quality—often glazed polychrome ware. By the 13th cent. a fine stoneware tends to take the place of E. in Persia.

European Earthenware.—Dark Age E., following the fall of the Rom. empire, was very simple and of poor quality. By the 10th cent. improvements, such as the use of glaze, were made, and by the 13th cent. polychrome E. in W. Europe of high artistic standards and shapes had been evolved. The great advance in E. came with the introduction of a tin glaze from the Moslems in Spain (see HISPANO-MORESCUE). This technique, which provided a fine white ground for coloured decoration, spread to Italy where it was developed, creating the new class of E. called maiolica (q.v.), and later, in the 16th cent., to France where it is called faïence (q.v.). The great centres, Rouen, Moustiers, and Strasbourg, dominated the styles of the many other Fr. factories. At the same time, this technique was developed in an individual way in the Netherlands (see DELFTWARE) and in Germany, particularly at Nuremberg under a craftsman, Augustin Hirschvogel (1503-53). In 16th-cent. France, lead-glazed E. in a style completely independent of It. or other foreign influence was made by Bernard Palissy (q.v.), and at Saint-Porchaire, known as Henri-Deux ware. In the late 17th cent. E. in imitation of Delftware was made in Germany at Frankfurt-on-Main, Hanau, Berlin, etc., and by the 18th cent. was often adorned with beautiful paintings, sometimes signed, by the *Hausmaler* or 'outside the factory decorators.' In England, tin glaze E. was introduced from Holland about 1570 (see DELFTWARE) but the medieval tradition of lead-glazed E. remained unrivalled in Staffordshire and Derbyshire, where Slipware, Athbury and Whieldon wares (q.v.) were made in the 17th and 18th cents. Josiah Wedgwood (q.v.) not only industrialised the making of E. but created a 'Cream-Coloured Ware' (q.v.), which was imitated everywhere in Staffordshire, in Leeds, Swansea, etc., and soon had a secure world-wide market, being so much cheaper than porcelain but possessing many of its qualities. It remains a standard material for table use to-day. See also references under CERAMICS and POTTERY.

Earthing, in electrical engineering, connection of any metal part (not normally carrying current) of machinery or appara-

tus to a plate or framework buried in the earth and therefore assumed to be at zero potential. The object is to prevent shock to human beings (normally at zero potential) touching such parts, in case any charge has leaked through from 'live' conductors. In house installations water pipes are at earth potential. The Institution of Electrical Engineers' Regulations recommend the use of the all-insulated type for all portable equipment and give rules for E. of metal conduits and cable sheaths. Simultaneous contact with an earthed and a leakage-charged object is especially dangerous. Factory regulations require E. of machine frames and other exposed metal parts, and where efficient E. is not possible there must be earth-leakage protection by a circuit-breaker or fuse which opens the circuit as soon as the metal becomes charged to a certain potential. On farms E. is essential, and sometimes earth-leakage protection is advisable. The steel pylons of the Grid are earthed through the wire connecting the tops, which is taken to an earth-plate at each 3rd or 4th pylon. It is therefore not dangerous to touch the lower part of the pylon. Trolleybuses that run on rubber tyres are sometimes earthed by a trailing chain. In Great Britain the neutral point of transformers and machines (q.v.) is earthed through a low resistance. This makes elaborate protective measures against earth-leakage unnecessary. On the Continent and in Sweden the arc-suppression coil (q.v.) is much used; in Norway the neutral point is left isolated.

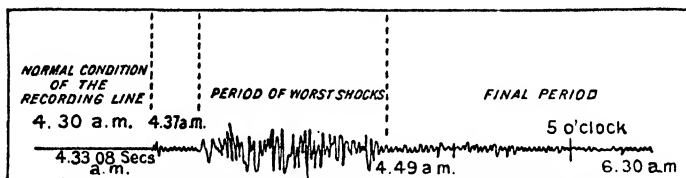
Earthquake, trembling or shaking of the earth, due to a sudden movement or failure in the crust as a result of slowly growing strain. This strain is imposed on the outer part of the earth as the result of movement of material in the deeper parts; the effect is cumulative and E.s provide periodical relief. The place within the earth where the movement occurs is termed the focus of the E. and the position on the surface immediately above the focus is the epicentre. An E. sets up shock waves within the earth which travel outwards from the focus, as ripples spread on a pond into which a stone has been thrown. One type of shock wave set up by E.s does in fact closely resemble such ripples, for it causes a vibration in a plane at right angles to the direction in which it is travelling. A second type of wave, however, sets up vibrations parallel to the direction of travel. Near the epicentre these vibrations may set up very destructive large surface waves which cause the greatest destruction, bringing down buildings, causing landslides, and starting tidal waves or 'tsunamis' at sea which may sweep in to inundate nearby coasts.

Within the area affected by an E. the intensity at any place may be gauged by the nature of the damage done, but seismographs, which are instruments designed to record E.s, can detect shocks at great distances, where no damage may

occur, and enable the energy released during an E. to be calculated. By comparing the times at which the shock waves reach sev. seismographic stations it is possible to establish the position of the epicentre and the depth of the focus. E.s are much more common in some parts of the earth than in others. Most E.s are shallow, originating at depths of less than 30 m. below the surface. Intermediate E.s, with a focus at between 30 and 150 m. depth, are less common, and deep E.s, occurring down to 430 m., the rarest of all. The deep E.s are, however, often very large and, as a group, account for the greater part of the energy dissipated by E.s or seismic activity.

E.s may be recorded anywhere, but originate in parts of the earth where volcanoes or earth movements are active. Most E.s occur in one of 2 well-defined belts; a belt running round the Pacific,

60,000 lives were lost; Aleppo (1822), 20,000 lives lost; Naples (1857), 12,000 lives lost; Peru (1868), 25,000 lives lost; Krakaton, where the E. was accompanied by a volcanic disturbance by which the is. was completely destroyed; Charleston (1886), where almost every building was damaged; India (1896), when Assam was devastated; Mont Pelée (1902), 20,000 lives lost; India (1905), where a disturbance spread from Kangra over an area of 1,500,000 sq. m., causing the loss of 20,000 lives; California (1906), when a large portion of San Francisco was destroyed; Valparaiso (1906), 2500 lives lost; Messina (1908), when Messina, Reggio, and many vils. were totally destroyed, with a loss of life estimated at 77,283. Japan suffered its worst disaster on 1 Sept. 1923, when an E., followed by a tidal wave and fire, destroyed the cap. city, Tokyo, one of the world's largest



SEISMOGRAPH RECORD OF THE MESSINA EARTHQUAKE (1908)

which includes the W. coast of the Americas, the Aleutians, the is. off E. Asia, and New Zealand, together with a loop running from Central America into the West Indies, or in a belt which follows the Mediterranean, crosses Asia Minor and the Himalayas and which passes through Indonesia to join the first belt.

Two-thirds of all E.s and virtually the whole of the deep E.s occur in the Pacific belt, whereas a fifth occur in the second or Mediterranean belt. The remaining E.s occur mostly along the mid-Atlantic ridge, in the Indian Ocean, near the Rift Valleys of E. Africa, and near major faults in otherwise stable parts of the crust. Minor shocks, for example, are felt in Britain near the Great Glen Fault which runs along the Caledonian Canal between Fort William and Inverness. These movements can usually only be detected by seismographs and any damage caused is generally trifling.

The strains which produce E.s result either from the movement of molten rock below the crust or are the result of stresses estab. during the uplift of rocks to form mts. The 2 seismic belts do in fact follow the general line of recent mt chains or run near to lines of active volcanoes.

Notable earthquakes.—Among E.s of particularly disastrous effects are the following: Lisbon (1755), when from 30,000 to 40,000 lives were lost; the greater part of the city was wrecked, fire broke out, and a tidal wave swept over the quays and destroyed the shipping; property was destroyed to the value of £20,000,000; Calabria (1783), when

cities, and Yokohama, the chief port. Casualties were 246,540, of whom 103,733 were injured, 99,331 killed, and 43,476 missing and probably all killed; 447,128 houses were destroyed by fire, and 128,266 by collapse. An area of 50,000 sq. m. was devastated by an E. in S. central Chile, Jan. 1939, and 30,000 persons killed, mostly in the cities of Concepción and Chillón. Turkey suffered a series of E.s in Anatolia in Dec. 1939, involving the death of over 30,000 persons, Erzincan being almost wholly demolished. Other disastrous E.s rocked Anatolia in July 1940 and Dec. 1942. 4000 people were killed near Karachi, India, in an E. (Nov. 1945) caused by a seismic sea wave. The Dominican Rep. (Aug.) and N. Peru (Andes mtn area, Nov.) suffered violent E.s in 1946. In the same year, S. Japan was devastated by a very severe E. in Dec. About 4000 persons lost their lives in Fukui, Japan, June 1948. Violent tremors in central Ecuador on 5 Aug. 1949 killed 7000 and left 100,000 homeless. During 1950 disastrous E.s occurred in Cuzco, Peru, on 21 May, in N.E. Colombia (Arboledas) on 8 July, and in N. Assam, India, in Aug., followed by floods, leaving about 5 million people homeless. El Salvador (Jucuapa) had its worst E. on 6 May 1951, the Ionian Is. in Aug. 1953. An E. in Orleansville, N. Algeria, 9–12 Sept. 1954, killed about 1600 people. S. Lebanon was heavily hit by shocks on 16 Mar. 1956. Kutch in India on 27 July, the Kalmard area in Afghanistan on 10 June, and S. Persia on 4 Nov. In July 1957 2000 persons were reported to have been killed in a disastrous E. in

N. Persia; Mexico City was severely rocked in the same month.

See also FLOODS AND INUNDATIONS; HURRICANES; TORNADOES; TYPHOONS.

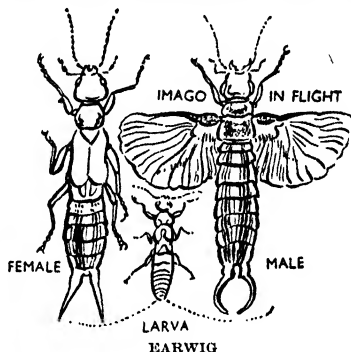
See C. Davison, *The Origin of Earthquakes*, 1912; *A Manual of Seismology*, 1921; *A History of British Earthquakes*, 1925; H. Jeffreys, *Great Earthquakes*, 1936; K. E. Bullen, *An Introduction to the Theory of Seismology*, 1947; *Seismology*, 1954; G. A. Elby, *Earthquakes*, 1957.

Earthwork, in a strict sense, is used of any bank or mound of earth with or without a defensive ditch, which is intended for use as a fortification. In an archaeological sense, in which the term is usually employed, an E. may be a burial mound, an earthen circle which is part of a stone circle monument, a 'camp,' which is best understood as a defended area for a community, a hill-fort or hill-tin, the site of an anct. vil. or primitive cultivation system, a hollow track-way, a linear dyke or boundary, a Norman castle mound, a medieval homestead moat, or a medieval enclosure bank. The term is thus a generic one of wide application. See also ARCHAEOLOGY; BARROWS; CATRNS; HILL-FORTS; IRON AGE; OFFA'S DYKE; ROMAN REMAINS IN BRITAIN; DYKES; SOUTERRAINS.

Earthworms belong to a div. of Annelids called Oligochaeta. They are found in all parts of the world, though naturally they do not thrive in arid tracts; and their effect upon the fertility and drainage of the soil can hardly be calculated. Burrowing into the ground, they cast up the earth they have swallowed, and so pursue a constant and thorough system of ploughing. Though eyeless, they evade the light and only come out of their burrows at dusk, often remaining, even then, with their tails in the holes and their bodies working round and round. The Brit. E. are confined to the Lumbricidae, and are usually about 6 in. long, with a pointed head, rounded body and slightly flattened tail. The *Allolobophora*, which are largely distributed over England and Ireland, are also found in the Arctic regions, and are the only E. capable of burrowing through snow and ice; *Lumbricus terrestris*, the common E., and *L. foetidus*, the dunghill worm, represent another genus; and *Alluris*, the remaining genus, are equally at home on earth or in water. Some tropical species of E. reach a gigantic size, those found in Central Africa, Australia, and Ceylon growing to a length of 3 to 6 ft.

Earwig, name given to certain species of Forficulidae. *Forficula auricularia*, the common E., is found all over Europe, and is regarded by horticulturists as a great pest, as it feeds on young shoots, the petals of flowers, and the flesh of soft, ripe fruit. The name arises from a popular but erroneous idea that this insect will crawl into the ear and remain. The E. is gregarious and nocturnal, and makes its home under stones, beneath the bark of trees, or in almost any dark hole or crevice. The larvae, when hatched, cluster round their mother, whom they closely resemble, except for the lack of wings.

Easements form one of the class of rights called incorporeal hereditaments (q.v.) (and see also GRANT). E. consist of those rights in the nature of privileges or conveniences without profit which one or more persons have in, or over, the land (q.v.) of another, as e.g. a right of way or a watercourse (see LAND LAWS). E. are usually annexed or appurtenant to the ownership of a particular piece of land (the dominant tenement), and are said to be affirmative if the owner of the servient tenement must allow the owner of the dominant tenement to do something, as e.g. to use a right of way across his land; negative if he must refrain from doing something, as blocking up the 'ancient lights' of the other. E. consist chiefly of rights of way, watercourse, and light (see LAND LAWS), but include any right over



the land of another not 'capricious,' e.g. a right to increased lateral support for land weighted with buildings, or a right to access of air for one's chimney or window, is an E. A right to light may be defeated by blocking access to light, unless the right arose by express grant or by prescriptive title or user of 20 years. E. arise either by (1) custom, e.g. where villagers have been accustomed for a number of years to use a pathway over a piece of land; (2) grant; (3) prescription, either at common law, i.e. where the right has been enjoyed from the time of legal memory (accession of Richard I); or under the Prescription Act, 1832, which makes an uninterrupted user for 20 years *prima facie* evidence (q.v.) of the right to a way or watercourse, while after 40 years an indefeasible title is estab.; and 20 years as uninterrupted user is conclusive of a right to light; (4) necessity, i.e. where absolutely necessary to the reasonable enjoyment of a tenement, e.g. if A sells B a piece of land entirely surrounded by other land of A's, a right of way in B is necessarily implied over the surrounding land. E. are lost by non-user for 20 years, by express release, or, of course, by reason of the dominant and servient tenements falling into the possession of the same person.

East, Sir Alfred (1849-1913), painter and etcher, b. Kettering, Northants; studied

art in the Glasgow School of Art, and later at the Ecole des Beaux-Arts in Paris, where he received lessons from Bouguereau. A.R.A., 1899. In 1906, the year when he pub. his *Landscape Painting in Oil Colour*, he was chosen president of the Royal Society of Brit. Artists. His pictures are widely distributed, and may be seen in the galleries of Birmingham, Chicago, and Venice. As a painter of landscape, he was noted for charming and well-balanced composition. 'The White Carnival' (Brussels), 'Autumn' (Manchester), and 'Passing Storm' (the Luxembourg) display this and other merits. He was knighted in 1910, and elected R.A. in 1913.

East, quarter of the horizon where the sun rises, when in the equinoctial. From very early times the E. has been clothed in a certain sacred mystery, and it was the custom of many of the pagans (as it is generally among Christians) to build their altars in the E. part of places of worship so that they could offer their sacrifices towards the rising sun. Hence arose the custom of turning towards the E. for prayer, also the practice of laying the dead with their feet toward the E.

East Africa, British, see BRITISH EAST AFRICA; KENYA COLONY; TANGANYIKA TERRITORY; UGANDA PROTECTORATE.

East Africa, German, see AFRICA. GERMAN EAST, CAMPAIGN IN, FIRST WORLD WAR; RUANDA URUNDI; and TANGANYIKA TERRITORY.

East Africa, Portuguese, see MOZAMBIQUE.

East African Railways and Harbours, formed on 1 May 1948 by the amalgamation of the Kenya & Uganda R.s & I.s and the Tanganyika R.s & Ports Services. The R.s are metre-gauge and some 1300 m. of line are open. The undertaking operates extensive road, lake, and river services and administers the ports of Mombasa, Tanga, Dar-es-Salaam, Lindi, and Mtwara.

East Anglia, see ANGLIA, EAST.

East Barnet, urb. dist. of Herts, England, lying about 1 m. SE. of B. (q.v.), includes New B., Monkton Hadley, and Brunswick Park. E. B. par. church, built 1100, is one of the oldest churches in the co. Pop. 40,414.

East Cape (Asia), see DEZHNEV, CAPE.

East Chicago, port city in Indiana, U.S.A., on Lake Michigan, with steel mills and foundries, oil and metal refineries, etc., and a canal connecting with the Illinois Waterway. Pop. 54,300.

East Cleveland, city of Ohio, U.S.A., suburb of C. and site of General Electric experimental laboratories. Pop. 40,000.

East Detroit, city in Macomb co., Michigan, U.S.A., a residential suburb of D. It has truck and poultry farming. Pop. 21,461.

East Flanders (Flem. Oost-Vlaanderen), prov. of Belgium, with Antwerp to the E., Brabant to the SE., and West F. to the SW. It includes the basin of the Scheldt, and under skilful cultivation yields excellent crops, sugar-beet, flax, and hops, especially in the Waas dist., which was once barren marsh. There is a

considerable trade in flowers and textile manufs. The chief tns are Ghent (the cap.), the 2nd port of Belgium, Sint-Niklaas, Alost, Eekloo, Dendermonde, and Oudenaarde. The area is 1147 sq. m. Pop. (1955) 1,249,435. See also FLANDERS.

East Friesland, see FRIESLAND.

East Ham, co. bor. of SW. Essex, England. It is one of the 3 co. bors. in Greater London. Pop. 120,000.

East India Company, C. founded for the purposes of trading with I. and the E. Indies. It received its original charter at the hands of Queen Elizabeth in 1600, and this charter, at first granted for 15 years, was subsequently granted for ever by James I. C.s for similar purposes had already been formed in the great maritime nations of Europe. It was in fact the monopoly of trade by Dutch E. I. C. which led to the foundation of the Eng. E. I. C. in the year already mentioned. The first governor of the C. was Sir Thomas Smythe, and the C. early estab. a trade, not only with the stations which it founded on the coasts of I., but with the Far East as well. The early ventures (usually private ones) of the C. were entirely successful, and huge profits were realised. The competition of the Eng. aroused the anger and jealousy of the Dutch and led to many quarrels between them. These culminated in the massacre of Ambogna, when the Dutch captured and ill-treated a number of Eng. traders. The indignity was never forgotten, but for the time the Eng. traders confined their attentions to the mainland of I., leaving the is. to the Dutch. The trade with I. led to the building of fine merchant vessels, and the palm of mercantile shipping must be given to the E. I. C. up to the 19th cent. During the 17th cent. the C. began to spread and to gain ter. It built fortresses, raised troops, and gained general recognition, but still in quite a small way. This monopoly was interrupted by the advent of a number of interlopers who felt that they had equal rights with the C. to the Indian trade.

The C. appealed against the interlopers, but it was held that except by special act of parliament all Brit. subjects had the right to trade with I. (1694). In 1698 one may say a new E. I. C. sprang into being, when by loan of £2,000,000 to the state the C. was reorganised and reinstated. Quarrels between the rival C.s continued down to the reign of Queen Anne, and the gov. only renewed privileges to the original C. after obtaining large grants of money. The C. still remained merely a trading concern, and its authority, as stated in the charter of Queen Elizabeth, still held good. But during the 18th cent. the rivalry of France and England extended to I., and gradually the C. rose, after the victories of Clive, to the position of a ruling power. The C. still held unchecked power over its servants and soldiers, until the Regulating Act, 1773, created a governor-general, appointed by the C. but approved of by the Crown. A council of 4 was also created together with a court of judicature. Pitt's India Bill (1784) created a board of control and gave the

political, financial, and military control into the hands of the gov. Indian policy was no longer a matter for the C. but for the gov. Gradually the monopolies of the C. were taken away, and the C. in this way ceased to be a trading C. and became merely an administrative body. Finally, after the disaster of the mutiny (1857), the entire administration of I. passed into the hands of the Crown (Aug. 1858). See Florence Bowman and Esther Roper, *Traders*, 1924; W. Foster, *East India House*, 1924; C. Grey, *Merchant Venturers of London*, 1932; C. G. Fawcett, *English Factories in India*, 1936; R. H. Mottram, *Trader's Dream*, 1939; C. Lestock Reid, *Commerce and Conquest*, 1948.

East Indies is opposed in the broadest sense to West I., the name given by early explorers to is. in the Atlantic which they believed to be off the coast of India. It thus includes India and many groups of is. in the Pacific. But the name is commonly used of the Malay Archipelago, and especially of Indonesia (q.v.). This archipelago is the largest cluster of is. in the world. It lies to the SE. of Asia, and to the N. and NW. of Australia, between 95° and 141° E. long., and 6° and 11° S. lat. Borneo—which is larger than the Brit. Is.—the Philippines, Java, Sumatra, and Bali must once have formed part of the Asiatic continent: the shallows about them—nowhere are the surrounding seas deeper than 250 ft—indicate that they are summits of submerged hills. The investigations of botanists and zoologists all go to prove that the more easterly is. are closely associated with Australia. It is a curious fact that of the 2 adjacent volcanic is. of Bali and Lombok, separated by a narrow but very deep channel, Bali is entirely Asiatic in fauna and flora, Lombok markedly Australasian. In other cases the Asiatic and Australasian characteristics merge in the central is. and only become marked in those near the continents. Tin, malachite, copper, petroleum, and precious stones are the chief source of mineral wealth. There are many volcanoes, and the soil, as might be expected, is very fertile, yielding sugar, coffee, rice, maize, tea, coconuts, plantains, and spices in plenty. The land is, however, covered, for the most part, in unexploited forest. Java, the most developed of the is., shows what riches could be produced were they all systematically cultivated. Their natural resources are immense. The is. formerly known as Dutch E. I. are now Indonesia. In 1898 the Philippines were ceded by Spain to the U.S.A. but gained their independence as a rep. in 1946; Portugal holds a part of Timor; North Borneo is a Brit. protectorate, as is Papua, the SE. part of New Guinea. The NE. part of that is. was formerly a Ger. possession, but now constitutes, with the Bismarck Archipelago, the Mandated Ter. of New Guinea. The native pop. includes Papuans or Melanesians and Malays.

See also DUTCH EAST INDIES; BORNEO; INDONESIA; JAVA, etc. See G. T. Raynal, *Histoire philosophique et politique des*

établissements et du commerce des européens dans les deux Indes, 1780; Augusta de Witt, *Island-India*, 1923; R. Kennedy, *The Ageless Indies*, 1942; B. H. M. Vlekke, *Nusantara, a History of the East Indian Archipelago*, 1943; B. Lasker, *Peoples of South-East Asia*, 1944; H. Daniel, *Islands of the East Indies*, 1944. See also D. Campbell, *Java: Past and Present*, 1915; *Encyclopaedie van Nederlandsch-Indië*, 1917 ff.; H. S. Banner, *Romantic Java as it was and is*, 1927; H. Ponder, *Javanese Panorama*, 1942, and *In Javanese Waters*, 1944; J. Fabricius, *Java Revisited*, 1947; J. S. Furnivall, *Colonial Policy and Practice. A Comparative Study of Burma and Netherlands India*, 1948.

East Kazakhstan, oblast (prov.) of the Kazakh S.S.R., Soviet Union.

East Kent Regiment, Royal, see BUFFS.

East Lancashire Regiment, The, formerly 30th and 59th R.s., linked in 1881 to form E. L. R. The 30th was raised in 1702 as marines, and served at the capture of Gibraltar, 1704; thence in West Indies, America, and in fleet against Fr. coast. In 1782 it was named 'The Cambridgeshire Regiment,' served under Abercromby in Egypt in 1801, and in the Peninsular war with Wellington. It was in the Crimean War, and later went to Canada. The 59th was raised in 1755, and served in the Amer. War of Independence. It afterwards took part in the Peninsular campaigns and the battle of Waterloo. It then served in the West Indies, China, and Afghanistan. The E. L. R. served in the Boer War and raised 17 battalions during the First World War, which served in France, Flanders, Macedonia, Gallipoli, Egypt, and Mesopotamia. In the Second World War the R. fought in NW. Europe. They were engaged in especially heavy fighting in the vicinity of Goch and other tns in the Rhineland. The regiment is to be amalgamated with the South Lancashire Regiment by 1959.

East Lansing, residential city in Ingham co., S. central Michigan, U.S.A., on Red Cedar R. It is the seat of Michigan State College of Agriculture and Applied Science, the oldest state agric. college in the U.S.A. (opened 1857). Pop. 20,325.

East Linton, small burgh of E. Lothian, Scotland, on the N. Tyne riv., 5 m. from Haddington. Nearby is Hailes Castle, once a residence of Mary Queen of Scots. Pop. 990.

East Liverpool, city of Ohio, U.S.A., on Ohio R. 36 m. S. of Youngstown. Clay products are its chief manufs. Pop. 24,200.

East London, seaport of SE. Cape Province, South Africa (see PORT ELIZABETH), at the mouth of the Buffalo R., 569 m. by sea from Cape Town, 253 m. from Durban, 644 m. from Johannesburg, terminus of the Cape Eastern Railway System. (Cap. cost of the harbour was £4,140,000; to-day it handles substantial exports of wool, also citrus fruits, pineapples, chilled meat, and dairy produce. Bulk petrol and fuel-oil tanks are situated near the harbour. A large fishing industry is based on E. L. The beautiful scenery and excellent bathing make it a

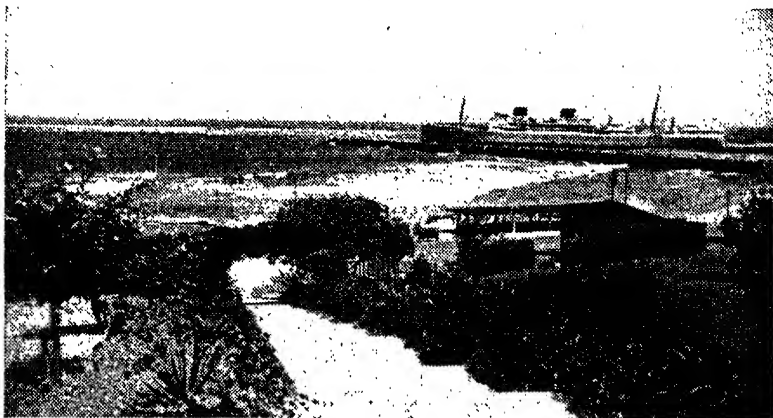
popular seaside resort. The site of E. L. was discovered in 1836 by John Baillie, an Eng. settler, who reached South Africa in 1820; and the first steps to founding a settlement there were taken about 1847 by Capt. Wm Baker, who gave the name of Fort Glamorgan to the place. Pop.: Whites, 45,096; Bantu, 41,432; Coloureds, 6,219; Asiatics, 1689.

East Lothian (formerly **Haddingtonshire**), SE. maritime co. of Scotland, bounded by the Firth of Forth and the North Sea on the N., and the cos. of Berwick (on the E.) and Midlothian (on the W.). There are sev. anct castles, including Tantallon on the N. coast, and the co. is associated with John Knox and

with manufs. of farm equipment. Pop. 13,900.

East Orange, city of Essex co., New Jersey, U.S.A., adjoining Newark, 12 m. from New York, of which it forms a suburb. It has wide, well-shaded streets and many attractive houses. There are electrical works and manufs. of pharmaceutical supplies, paints, and insecticides. Upsala College and Panzer College of Physical Education are here. Pop. 79,340. See Whittimore, *The Founders and Builders of the Oranges*, 1896.

East Point, suburb of Atlanta, Georgia, U.S.A. It manufs. yarn, fertiliser, metal products, batteries, and furniture. Pop. 21,080.



EAST LONDON: A LINER LEAVING THE HARBOUR

Wm Dunbar the poet. Its surface is generally hilly in the S., with the Lammermuirs (1500 ft), and flat in the N. The only important riv. is the Tyne (28 m.). Coal and iron are mined and limestone quarried in various dists., but the chief occupation is agriculture, and the co. is noted for the richness of its grain and green crops. Fishing is also carried on. The chief tns are the royal burghs of Haddington (the co. tn), Dunbar, and North Berwick. Berwickshire and E. L. together return 1 member to Parliament. Area 267 sq. m.; pop. 52,500.

East Main, former name of the portion of Labrador peninsula (Hudson Bay Ters.) bounded N. by Hudson Strait, W. by Hudson Bay, S. by Quebec. It is now the Ungava dist. of the dominion of Canada, with a scanty Indian pop.

East and West Malling, 2 adjoining pars. in Kent, England, in the Medway div. E. M. is 4 m. W. of Maidstone, and W. M. 5½ m. WNW. The latter has the remains of a Benedictine nunnery founded in 1090. Pop. of rural dist. 38,300.

East Moline, city in Illinois, U.S.A., on the Mississippi R. adjoining Moline,

East Providence, tn of P. co., Rhode Is., U.S.A., separated from P. by the Seekonk and Providence rivs. It manufs. building materials, chemicals, petroleum products, wire and steel products, insulating board, paper, feed, flour, and roofing; there are also dairy products. Other activities include textile dyeing and ship-building. Pop. 35,871.

East Prussia (Ger. *Ostpreussen*), the former easternmost prov. of Prussia (q.v.). In 1919 the creation of the Polish Corridor (q.v.) separated it from the rest of Germany. In 1945 the prov. was divided between Russia (as part of the R.S.F.S.R.), which took the N. third including the cap. Königsberg (Kalinigrad), and Poland, which obtained the S. portion (see MASURIA). E. P. lay between the Vistula and the Neman rivs. (qq.v.); a large part of the ter. is forest, moor, and bog, and the soil in general is poor. The coast, on the Baltic, is flat and sandy and has 2 large indentations, the Frisches Haff and the Kurisches Haff (qq.v.). Oats, rye, potatoes, and flax are grown, horses and cattle are bred, there is much fishing, and some amber is found.

Apart from Königsberg, tns of importance are Tilsit (Sovetsk), Insterburg (Chernyakhovsk), Elbing (Elblag), Braunsberg (Braniewo), Allenstein (Olsztyn), Gumbinnen (Gusev), and Marienburg (Malbork). Area 14,280 sq. m.; pop. (1939) 2,280,000.

Unprejudiced examination does not bear out the tradition that E. P. was the home of 'Prussianism' or the *fons et origo* of Ger. militarism. It was a typical E. Ger. prov., with great estates rather less predominant than elsewhere, and like all Germany E. of the Elbe it was colonial land or land reconquered in the last 600 years from the Slavs. But unlike the 'march' lands won back by secular princes, E. P. was the relic of a crusading order, the Teutonic knights (q.v.), who, in the early 15th cent., were finally defeated by the Poles at the great battle of Tannenberg (q.v.), and their ter. reduced to the land round their 2 great crusading castles Marienburg and Königsberg, or roughly the modern ter. of E. P. It is sometimes thought that the crusading militarism of the Teutonic knights was the source of Ger. ruthlessness in war, but the theory has no warrant in hist. In the 17th cent. the landowners of E. P., far from manifesting a habit of militant servility, pursued a constitutional struggle with the Elector of Brandenburg. In the 19th cent., far from aiding the Prussian militarists to dominate Germany, E. P. took the lead against them, and the Liberals of the Prussian parliament who resisted Bismarck's (q.v.) unconstitutional system were largely representatives of E. Prussian rural constituencies. In fact the Ger. farmers and traders from E. P. showed the rough independence and courage which not seldom characterise a colonial people. Later the Junker landowners (see JUNKERS) and liberal farmers composed their differences and united in an agrarian organisation known as the Landbund. In the 19th cent. E. P. was not notably or aggressively nationalistic in the conflict with the Poles, and in fact produced the few Ger. radicals who wanted to co-operate with the Poles in a common war of liberation against Russian Tsardom. After 1919 when W. Prussia and Posenania were incorporated in Poland, E. P. became the isolated advance post of Ger. nationality in E. Europe for the first time since the awakening of national consciousness, and its frontier nationalism tended to be magnified as a symbol of the national struggle, mainly by the propagandist immigrants rather than by the E. Prussians themselves. No doubt some of the Prussian military families came from E. P., but they are scattered all over Germany E. of the Elbe and few have an exclusively E. Prussian origin. Depriving Germany of E. P., or even of a great part of it, spares her the strategic problem of defending an isolated prov. besides reversing a Ger. advance at Slav expense sev. centuries ago, but it involves also the difficulty of shifting a great number of Germans to other parts of the country.

In the First World War the Russians advanced into E. P. in 1914 as far as

Alenstein, when Hindenburg routed them in the region of the Masurian Lakes at the second great battle of Tannenberg (26-30 Aug. 1914). By the treaty of Versailles (q.v.) a part of E. P. was ceded to Poland. In the Second World War the Russian armies invaded E. P. in Jan. 1945, Marshal Rokossovsky (q.v.) advancing northward against the prov. while simultaneously Gen. Tcherniakovsky attacked from the E. By 21 Jan. Tilsit, Insterburg, Allenstein, and Tannenberg had been taken and a few days later Rokossovsky's forces had advanced to the Gulf of Danzig. On 9 April the Russians took Königsberg. (See EASTERN FRONT OF RUSSO-GERMAN CAMPAIGNS IN SECOND WORLD WAR.) After the defeat of Germany the Potsdam Agreement (q.v.) provided, on the proposal of the U.S.S.R., that, pending the final determination of ter. questions at the peace settlement, the section of the W. frontier of Russia which is adjacent to the Baltic should pass from a point on the E. shore of the Bay of Danzig to the E. N. of Braunsberg-Goldap, to the meeting-point of the frontiers of Lithuania, Poland, and E. P. It was also agreed that ultimately the city of Königsberg and the area adjacent to it as described above should be transferred to Russia. The transferred portion includes the Kurisches Haff, Gumbinnen, Tilsit, and Insterburg, but excludes Elbing, Braunsberg, Allenstein, Osterode, and Marienburg, all of which were included in that part of E. P. which was assigned to Poland.

See T. A. R. Marriott and Sir C. G. Robertson, *The Evolution of Prussia*, 1915; C. von Lörck, *Herrenhauser Ostpreussens*, 1933; W. Franz, *Geschichte der Stadt Königsberg*, 1934; S. Srokowski, *East Prussia*, 1934; J. A. Wilder, *The Economic Decline of East Prussia*, 1937.

East River, strait connecting New York Harbour with Long Is. Sound. E. of New York City, U.S.A. It is 15 m. long, 600-4000 ft wide. By its N. arm (Harlem R.) and Spuyten Duyvil Creek it is connected with the Hudson R. It separates the bors. of Manhattan and the Bronx (W. and N.) from those of Brooklyn and Queens (E. and S.). Among its is. are Blackwells, Randalls, Wards, and Rikers. The channel at Hell Gate (between Wards and Long Is.) has been made navigable by blasting the rock. Brooklyn, Manhattan, Williamsburg, Queensboro, Triborough, Bronx-Whitestone, and Hell Gate bridges span E. R.

East St Louis, city in Illinois, U.S.A., on Mississippi R., opposite S. L. and connected with it by bridges. It is a railway centre with alumina and oil refineries, meat-packing plants, steel works, and grain mills, and manufs. chemicals, paint, glass, and prefabricated houses. There is a livestock market. Parks College of Aeronautical Technology (S. L. Univ.) is here. Cahokia Mounds State Park is nearby. Pop. 82,300.

East Surrey Regiment, The, formerly the 31st and 70th R.s. The 31st was raised in 1702 as marines. It became a foot R. in 1715 and fought at Dettingen,

where it gained its nickname of 'Young Buffs.' It served in the Amer. War of Independence, and later under Wellington in the Peninsula, then had a distinguished career in India. The 70th was raised in 1758 in Glasgow. It served in the West Indies and Canada, in 1863-6 in the Maori wars, and in the Second Afghan War, 1878-9. In 1881 the 2 R.s were linked to form the present R., which served in Egypt and the Boer War (1899-1902). During the First World War it raised 18 battalions, which served in France, Flanders, Italy, Macedonia, Egypt, Aden, Mesopotamia, and N. Russia. In the Second World War the R. fought in France in 1940, and in Africa, Sicily, and Italy. A battalion served throughout the Malayan campaign with the 6th Indian Infantry Brigade. The E. S. R. is to be amalgamated with the Queens by 1962.

East Yorkshire Regiment. The (The Duke of York's Own), Brit. R., formerly the 15th Foot, was raised in 1685. It gained great distinction under Marlborough at Blenheim, etc., and under Wolfe at Quebec. The R. saw much service in the West Indies and participated in the capture of Martinique, Havannah, St Lucia, and Guadeloupe. It went through the Second Afghan War with Lord Roberts. The title E. Y. R., added in 1782, was amended to The E. Y. R. in 1881. During the First World War it raised 21 battalions and served in France, Flanders, Macedonia, Gallipoli, and Egypt. The R. saw much service in the Second World War in Norway and at the battle of Normandy and the subsequent advance to the Rhine. Other units fought in Burma. The E. Y. R. is to be amalgamated with the West Yorkshire Regiment by 1959.

Eastbourne, municipal and co. bor. and popular seaside resort of Sussex, England, 64 m. SSE. of London. Formerly the site of the present tn was occupied by the 3 hamlets of East-borne, South-borne, and Sea-Houses, the antiquity of which is attested by the mention of Borne in the Domesday Book. The interesting par. church of East-borne belongs to the transitional Norman period, and dates back to the 12th cent. The modern tn, with its m. of terraced promenades, its spacious tree-lined streets, pavilioned pier, theatres, Winter Garden, golf links, and handsome public structures, owes much to the 7th duke of Devonshire whose family seat is at Compton Place, E., and whose name is commemorated in Devonshire Park, a fine public pleasure-ground. The boundaries of the bor. were extended in 1911, 1927, and 1938, and in 1929 the E. Council completed the purchase of some 4000 ac. of downland, extending from Beachy Head to Folkington. The summit of Beachy Head is 575 ft above sea-level and during the Second World War was the site of a radio location station. Civilian casualties through enemy air raids were: killed, 174; injured, 932; 475 houses were destroyed and no fewer than 11,000 were damaged. This damage was caused by 747 high-explosive bombs,

4000 incendiary and oil bombs, and 15 flying bombs. Pop. 57,200 (1952).

Easter, the greatest of all Christian feasts, in commemoration of the resurrection of Christ, about the time of the vernal equinox. The Gk. and hence the Lat. Vulgate, name for this feast is the *Pasch*, i.e. Passover, the Jewish feast with which the death and resurrection of Christ coincided and whose prophetic meaning they fulfilled. E. is thus the Paschal feast, the Christian Passover. The Eng. name E. and the Ger. *Ostern* are said to be derived from the name of the feast of the Teutonic goddess Ostera, celebrated by the anc. Saxons early in the spring. Some definite way of fixing a date for E., upon which many other festivals of the Church depend, became necessary very early. There was much difference of opinion; the Oriental Church commemorated our Lord's death on the 14th day of the moon after the spring equinox, and kept E. 2 days later; while the Lat. Church kept E. on the Sunday following the 14th day of the moon. The sect known as Quartodecimans in provincial Asia kept E. on the same day as that of the Jewish Passover, the 14th Nisan, claiming the authority of St John the Apostle for so doing; but Rome rejected it, saying that Christ's resurrection took place on the 1st day of the week after the Passover, and ought in that case to be kept on a Sunday. In AD 325 the Council of Nicaea settled that E. should be held on the 1st Sunday after the 14th day of the moon that occurred next after the vernal equinox, and that should the 14th day of the moon fall on the day of the equinox, the following Sunday was to be E. Sunday. Also it was decided that, in finding E., the vernal equinox should be considered to fall every year on 21 Mar. It was later directed that this calculation should be made according to the tables of Victorius of Aquitaine, which he introduced in AD 457. As Britain was now no longer a part of the Rom. empire, this 6th-cent. order regulating E. had no effect at first on the Brit. Church, which continued its calculation on the old method. After more than a century of controversy the matter was ultimately settled at the synod of Whitby in 664; and after this date the Brit. clergy conformed to the general practice of the W. Church.

As at present ordained, E. falls on one of 35 days (22 Mar.-25 April). Because of the social and commercial importance of the E. holiday, there is growing support for the adoption of a fixed E. In the rite of E. Eve, now once more performed at midnight, the Lat. Church, amid many beautiful ceremonies, kindles new fire, and lights a Paschal Candle representing the new Light of Christ. This may be derived from the renewal at Rome of the sacred fire in the temple of Vesta every year on the 1st of Mar., the beginning of the Rom. year. Bonfires are still lit by the priest on E. Eve in many parts of Europe, especially Germany. The E. fire of Germany corresponds to the Beltane fire of Celtic Europe, which had the same ceremonies and beliefs, namely, that

wherever the light of the fire reached, the fields would be fruitful and the inhab. safe from sickness and danger. Festivities were also held to celebrate E., such as dramatic performances, dances, songs, etc., and special cakes were made, of which the present-day 'hot-cross buns' (bearing a representation of the cross) and 'simnel cakes' are relics. The custom of the giving of E. eggs, as symbols of resurrection, life, and fruitfulness, is very ant. and widespread, especially in Europe. See J. Tyrer, *Historical Survey of Holy Week*, 1932; Sir H. Grierson (ed.), *And the Third Day: a Record of Hope and Fulfilment*, 1948.

Easter Island (Rapanui, Fr. île de Pâques, Sp. Isla de Pascua), isolated volcanic is. in E. Pacific, 27° 10' S. and 109° 20' W. The most easterly land settled by Polynesians. Since 1888 a dependency of Chile. Discovered by Adm. Roggeveen on Easter Day in 1722. He estimated the pop. as between 1000 and 3000. Owing to deportation by Peruvian slavers between 1858 and 1870, and the introduction of European epidemics, numbers dwindled to 100, but are now increasing again: in 1954 there were 760 natives gathered in a vil. on the W. side called Hanga Roa (Cook's Bay). The rest of the is. is given over to cattle and 35,000 sheep. Maize, sweet potatoes, figs, and bananas are grown. The is. is famous for the colossal statues, from 12 to 33 ft in height and carved from volcanic rock, which were found ranged along great terraces of stone. The origin of these statues, and of a form of script described as resembling Egyptian glyphs, remains an unsolved mystery to archaeologists.

Easter Sepulchre, a temporary wooden erection, or a richly decorated stone structure, placed in the chancel of a medieval church. It was associated with the religious ceremonies commemorating the burial and resurrection of Christ; in medieval times a crucifix or figure would be placed within the structure to remain there from Good Friday to Easter Day. Literary authorities trace the origin of Eng. drama to these ceremonies, which were accompanied by words and later by actions, and performed by the clergy. See also MIRACLE PLAY.

Easterlings, Esterlings, see STERLING.

Eastern Empire, see BYZANTINE EMPIRE.

Eastern Front, or Russo-German Campaign in the Second World War. (For Far Eastern Front, see PACIFIC CAMPAIGNS.) The German invasion of Russia began on 22 June 1941. The goals in the main lines of advance were Leningrad, Moscow, and Kiev. The invasion was made by 3 main armies, the N., and weakest, under von Leeb, the Central, and strongest, under von Bock, and the S. under von Rundstedt. Gen. von Leeb's primary task was to clear the Baltic states of Russian forces and bottle up the remaining Russian forces in the N. of Leningrad; and then, having taken Leningrad, he was to converge, with the Central Army, towards Moscow. These 2 armies were to move rapidly in the wake of the spear-head thrusts of the

armoured panzer divs. under Guderian, Germany's leading tank general. In the S. Lwów and the very strong natural line of defence along the Grodek chain of lakes left only one chance of a frontal breakthrough, in the direction Vladimir-Volynski-Lutsk-Novograd-Volynsk. The 'Stalin Line,' with Kiev as a strong base behind it, stretched along the Dniester and through very easily defensible country in the direction of Zhitomir and Korosten. Von Rundstedt was compelled to wheel round to the SE. right under the guns of Kiev and of the Stalin Line at Korosten, and to effect a daring operation in order to annihilate a large part of Budyonny's army W. of the Dnieper. But by the 10th week of the campaign, von Rundstedt dominated the Dnieper and could co-operate strategically and tactically with von Bock's army.

The Central and N. armies' first objective was the gap between the upper Dvina and upper Dnieper. This gave opportunities for breaks through parallel to the N. edge of the Pripet Marshes, from Grodno towards Baranoviche and Minsk, and from Vilna towards Minsk and Polotsk. Conditions favoured the invaders, whose new frontiers in Poland enabled them to attack from Vilna at once, while the fact that bridges over the Bug remained intact allowed Guderian to rush his panzer forces in a little over a fortnight through the Pripet Marshes and the Stalin Line towards Vyazma, W. of Moscow, destroying or capturing a number of Russian armies on the way—one of the greatest battles in the hist. of warfare. Von Leeb carried out a daring advance, capturing Kaunas and Daugavpils, breaking through the Stalin Line, repelling counter-attacks from Veliki Luki, the Valdai Hills, and Novgorod, and hemming in the remains of the Russian armies on the coast of Estonia and in Leningrad. These tactical and strategical successes of the N. and Central armies were partly due to the fact that the Russians elected to make their stand in the ters. recently acquired by the 1939 treaty with Hitler. Events showed that they ought to have adopted 'scorched earth' tactics from the beginning and destroyed all communications W. of the line Dvina-Lake Narocz-Minsk-Pripet.

The Germans, pursuing their familiar blitz tactics, had hoped for much speedier triumphs in the opening 2 or 3 weeks' fighting. But they made impressive advances, reaching the so-called 'Stalin Line,' which ran from the Gulf of Finland through Lake Peipus, along the frontiers of Latvia, Poland, and Rumania to the Black Sea, with a depth at Minsk and other vital places of between 50 and 100 m. By 2 July the Germans had captured Riga, the Latvian cap., 300 m. from Leningrad. The Finnish threat to Murmansk and Karelia was becoming serious and strong reinforcements of the Soviet Army and Air Force were rushed up from Leningrad to the N. front; while the threat to Leningrad through the Baltic States was checked by massing troops on the fortified lines running along the old

Russian border W. and SW. of the city against a threatened attack from Tallinn.

The Russian military leaders early reached the conclusion that it was impossible to hold up indefinitely, massed forces of tanks with fortified lines, and they therefore began to work out the plans for an 'elastic defence,' the basic principle of this new strategy consisting of the separation of the Ger. panzer arm from its supporting infantry, coupled with harassing guerrilla tactics. All depended on the magnitude and quality of the Russian equipment. Technically the Russian war-machine of 1941 was very different from that of 1914. The modern Russian soldier and army technician were almost entirely the product of the 'New Civilisation.' Quality was always a weak link in the Soviet economy; but, since 1930, real progress in the field of industrial production had been achieved, though wastage was enormous and much remained to be done in general economic organisation. In military organisation and liaison Germany had the upper hand. Yet the very precision of the Ger. war-machine hinged on its ability to keep to its time schedule. If this could be upset by the Russians the contending forces would, so far as technical performance was concerned, be more evenly matched. The losses on both sides were very great; but in this respect the advantage lay with Russia, whose mobilisation was as yet far from completed. Hence delaying actions were fought all along the front to give as much time as possible for mobilisation and the despatch of reinforcements.

The Germans approach the Stalin Line.—By this time the opposed 'lines' ran through Riga—Daugavpils—Borisov—Volynsk—Tarnopol—Cernauti—Bielski. But along most of the front the position was very confused. The Russians were still fighting for the most part on soil annexed by them within the previous 2 years, and the next stage of their resistance was based on the original defences begun on a large scale 10 years previously along the former frontiers from Latvia to the Black Sea, and in July this 'line' had been pierced at only one point—from Minsk towards Smolensk. The determination of the Russians to resist the invader by all and any means was illustrated by the promptitude with which they carried out Stalin's 'scorched earth' order—the order to destroy everything in the wake of their retreat. For battles over a front of such extent, involving such great numbers of men and elaborate equipment, there were no parallels. By the end of the first 16 days of the invasion, the Germans had reached a depth of no less than 300 m., giving an average of about 20 m. a day over the whole period—slightly faster than their advance on the W. Front to Sedan. Both sides were now preparing for a tremendous Ger. offensive against the Stalin Line, or chain of strong positions within the U.S.S.R. proper. So far the Germans had captured practically the whole of the fringe of ter. annexed by the Soviet Union since 1939, except Estonia. Though progress had been made in the

Baltic States, the vital sector in the campaign was in the neighbourhood of Minsk, where the Germans were now making 2 distinct thrusts on either side of the railway, the N. through Lepel and the S. through Bobruisk. Repeated Ger. attempts to cross the Dnieper were repelled and powerful counter-attacks were launched here and elsewhere by the Russians. W. of Kiev, in the Novograd-Volynsk sector, the Germans attacked with large tank forces. In the ensuing days a savage battle raged round Ostrov, near the junction of the Latvian, Estonian, and Soviet frontiers on the main Berlin-Warsaw-Leningrad railway. The closer the threat to Leningrad, the stiffer became the defence.

The end of the 3rd week found the Germans halted on a line running, roughly, from the Gulf of Riga across Latvia and White Russia to the R. Berezina and then down, through the border regions of the Russian Ukraine, to the Upper Dniester, the Pruth, and the Black Sea. At this time, after 3 weeks' furious fighting, the Germans were still 140 m. from Leningrad, 400 m. from Moscow, 150 m. from Kiev, and 130 m. from Odessa, and at only 2 points were they in Russia proper—between the Ostrov and Minsk sectors and near Novograd-Volynsk, in the Ukraine. Against this, the Germans had sustained great losses in men, tanks, and planes, and, moreover, the Ger. High Command found itself unable to concentrate the entire strength of the Luftwaffe on the Russian front on account of the growing Brit. air raids in the W. of Europe. The fighting spirit of the Russians remained unbroken, and the often wholesale slaughter of innocent civilians by the Germans in ter. they occupied only served to unite all surviving Russians against them. At the opening of the campaign errors were made which led to large bodies of men being cut through and encircled; but soon afterwards in defence and counter-attack the Russians showed not only coolness and great courage but marked ingenuity. Much had been learned from the mistakes of the Finnish War, particularly in the organisation of small units within the infantry to be trained for independent action, and in mobility generally.

The second German drive.—In this drive, which began approximately on 15 July, the Russians hurled some of their newest 150-ton tanks into the conflict around Kiev. In the N. the Ger. thrust at Leningrad made some progress in Estonia, and Tallinn, the cap., by Stalin's order, was set on fire. In White Russia, though Smolensk still held out, the fighting by 18 July had moved farther E. as the result of the Ger. thrust between the Dvina and the Dnieper. But now (20 July) so menacing was the Ger. drive that Stalin, by assuming the post of Commissar of Defence, put himself at the head of the Russian armies. By a variety of tactics the Russians bewildered, delayed, and wore down the Ger. columns. The Ger. High Command was forced to declare that the only real military advantage they

could achieve consisted of encircling and destroying the Russian forces and that further territorial gains were of dubious worth because of their cost.

The next centres of severe fighting were in the sectors of Petrozavodsk, on the Murmansk railway, N.E. of Lake Ladoga, and of Zhitomir, in the Ukraine, E. of Novograd-Volynsk, on the road to Kiev. There was also a renewal of the intensive Ger. drives towards Leningrad and Moscow, where the Russians still held out stoutly in the Smolensk sector. On 21 July Moscow had its first of a series of Ger. air-raids. The Ger. intention was much simpler than its result. It was to strike in 2 thrusts towards Moscow, one N. of the Smolensk-Moscow road through the gap between the Dvina and Dnieper rivs., and S. of the road eastwards from Bobruisk. When they had got so far the 2 columns would meet, compressing and annihilating the Russian forces between them. The Germans knew that in the critical battle for Smolensk everything depended on whether reinforcements would arrive in time. It was the part of the Russian defenders, boldly staying in their positions after they had been penetrated by the tanks, to see that reinforcements did not arrive. Again, at the N. end of the front the invaders were making but little headway. The destruction, too, of war material on both sides was immense, and the losses were cancelling each other out. There was, moreover, only negligible trace of that political disaffection upon which the Germans had counted, and little sign of disintegration in the Red Army. Subsequent reports showed that in the first days of the invasion, some areas outside Russia proper had welcomed the Germans, only to be disillusioned by the treatment they received.

There was now (Aug.) a comparative lull in operations against Leningrad like that on the more S. front, the pause being due to the Germans concentrating on the improvement of their communications. A serious threat to the Soviet defences was, however, developing in the S. Ukraine, where the forces of von Rundstedt were making strenuous efforts to destroy those of Budyonny. Budyonny skilfully extricated his forces from von Rundstedt's trap and reconsolidated his front along the E. bank of the R. Bug. Fighting was still severe in Estonia, Finland, and around Smolensk, but the Ger. main effort was concentrated in the Ukraine, because success there might well give them the industrial area of the Donetz basin and, ultimately, the Caucasus. On 13 Aug. the Russians evacuated Smolensk. Leningrad, Moscow, Kiev, and Odessa, however, still remained in Russian hands. The position in the centre, where the armies of von Bock faced those of Marshal Timoshenko, was static. But in the S. the position of the Russians had become critical. Budyonny had given up the valuable Krivoi Rog industrial area, and was exerting all his efforts to withdraw his armies to the E. bank of the Dnieper so as to protect

Odessa and as much of the E. Ukraine as might be practicable.

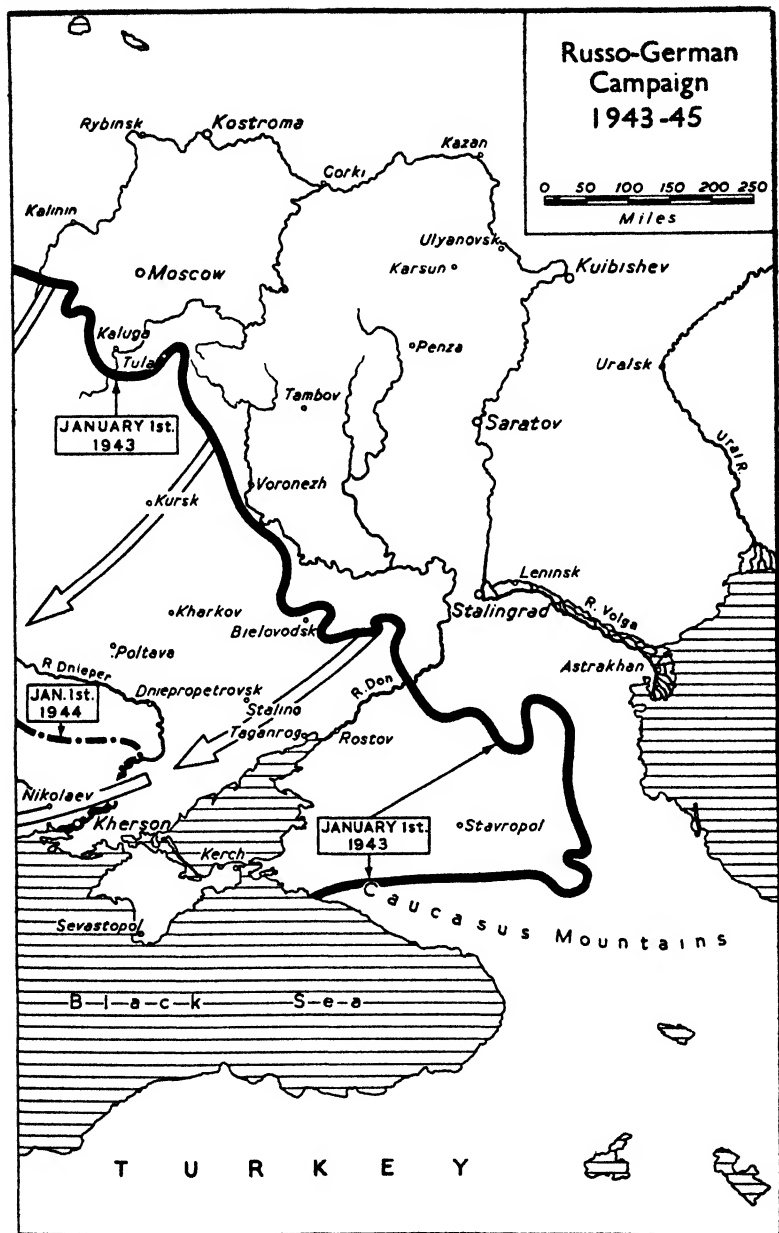
Novgorod evacuated—Battle for Leningrad.—After stubborn resistance the Soviet forces evacuated Kingisepp, 90 m. by road SW. of Leningrad. In the centre the immediate Ger. objective was Gomel, an important railway junction halfway between Smolensk and Kiev. Stubbornly as the Soviet troops fought for their land, the Ger. advance continued, slowly but remorselessly, involving ever more sacrifices by the Russians in conformity with the 'scorched earth' policy of Stalin. By 21 Aug. the Russians had to evacuate Gomel. The tremendous pressure of the Ger. thrust on Leningrad met strong resistance from Marshal Voroshilov's army. The month of Aug. was ending and the 50-m.-deep defences of the city showed no sign of collapse or of weakening. The Russo-Ger. campaign was now over 2 months old and in that period each side had probably lost about 1 million in killed and wounded.

President Roosevelt and Churchill had chosen Moscow as the place where proposals for aid to Russia would be discussed. This was significant, since their decision implied that they were confident that Moscow could withstand all dangers for a long time. Nevertheless, the Germans continued to advance regardless of losses. Novgorod, S. of Leningrad, was evacuated by the Russians on 25 Aug. after tenacious fighting. In the S., Budyonny's forces were retiring towards the crossings of the Dnieper, and Dniepropetrovsk, famous for its colossal dam, a peak of Soviet achievement, was now threatened. The Russians, however, destroyed the dam and so paralysed the vast industrial undertakings of the E. Ukraine. Dniepropetrovsk itself was abandoned.

The battle for Leningrad was reaching an acute stage. Ger. 'Stuka' dive bombers were launching numerous attacks on Leningrad's outer defences, yet without dominating the air, and the casualties inflicted by the Russian anti-aircraft guns and fighter-planes ran into hundreds (20 Aug.—3 Sept.). The operations against Leningrad both in scale and intensity overshadowed those elsewhere on the front (1-4 Sept.). Yet Voroshilov continued to hold the Germans back.

Russian victory at Pelnja.—On 4 Sept. the Ger. forces halted 50 m. from Leningrad and bitter fighting raged along a line which had now become more or less stabilised. Voroshilov held an advantage in the possession of supply bases close to the rear, as Leningrad's military industry was extensive and highly developed. The fighting in the centre of the front showed no sign of abating (7 Sept.). After some 26 days of fighting the Russians succeeded in re-taking the tn of Yelnya, 45 m. ESE. of Smolensk, 8 Ger. divs. being routed, their remnants retreating westwards (8 Sept.). But the battle for Leningrad continued with unabated fury and the Germans captured the important tn of Schlüsselburg, E. of the city near Lake Ladoga. Timoshenko's army, continuing





to counter-attack in the Yelnya sector, had now driven back the Germans 15 m. beyond that town and was still advancing. This victory at Yelnya was the first major success against the Germans that the Russians were able to claim. It virtually assured the safety of Moscow for the rest of the year, while a successful Ger. drive across the Dnieper was rendered improbable. The urgency, in view of the impaired Ger. morale at home, of the Nazi need to capture Leningrad was revealed by an order of the day (10 Sept.) issued by von Leeb, declaring that the city must be taken within the next few days regardless of cost. It was, further, essential that troops and equipment should be set free in order that the entire strength of the Ger. military machine might be hurled into the central sector, towards Moscow; this was necessary, not only because the colder weather heralded winter's approach, but also because, if Timoshenko and Budyonny were able to concentrate enough men and equipment, they would stand a good chance of inflicting such a serious major defeat that the Germans could not recover from it, at least during 1941; while the effect on the spirit of the Ger. home front might well be disastrous. This explained why the Ger. air-raids on Leningrad were the fiercest of the whole war and why, regardless of the sacrifice of life, Ger. ground troops were driven relentlessly into the deadly fire of the Russian fortresses, although Voroshilov's barrage still prevented the invader from making any substantial advance. R.A.F. fighters were now providing escorts for the Russian bombers from Leningrad.

Russians evacuate Kiev.—Kiev was now in danger from a double thrust—to the N. across the riv. and a drive by von Bock S.E. from Gomel. On 21 Sept. the Russians evacuated Kiev, but a fierce and confused battle continued to the E. of the city, both sides suffering great losses. In the extreme S., von Rundstedt's drive to the Sea of Azov had isolated the Crimea by land, but behind the powerful fortifications of the peninsula the Russians still offered a stubborn resistance.

Germans drive on Moscow—Soviet Government moved to Kuibishev.—The ensuing month saw bitter fighting along the whole front. This soon became concentrated in tremendous drives towards and around Moscow and against the Crimea. The drive on Moscow took the familiar form of 2 converging thrusts—one from the SW. and the other from the NW. Simultaneously the Germans launched a powerful drive in the Ukraine towards Kharkov and attacked the Crimean roads and railways from the air. Ger. attacks were especially furious in the region of Briansk and Vyasma, SW., and around Orel due S., of Moscow. Orel was evacuated on 8 Oct., Briansk 4 days later, and Vyasma on the 13th. The Ger. pincers were remorselessly closing in a ring round Moscow. The Soviet Gov. moved from Moscow to Kuibishev, though Stalin himself remained in the cap. Meanwhile, Odessa was evacuated by 16 Oct. after

furious street fighting. By 18 Oct. Ger. efforts to encircle Moscow had brought their forces in a ring marked by Kalinin, Rzhev, Mozhaisk, Kaluga, and Tula. But the pace of the Ger. advance had become slower and the Russians were making strong counter-attacks, notably at Kalinin, which often changed hands. Mozhaisk, Maloyaroslavets, and near Orel.

After a lull of some days, the Germans resumed the offensive in the S., mixed Axis forces of Rumanians, Italians, Hungarians, and other satellites advancing towards Taganrog and the industrial centres of the Donetz basin. The main advance was chiefly along the coast towards Rostov and the Don. At about this time the Russian armies were regrouped into a N. group under Marshal Zhukov, former chief of the general staff, who included Moscow in his command, and a S. group under Timoshenko. Zhukov was to prove the finest Russian general of the war.

Over 100 Ger. divs. were now operating between the Orel and Kalinin regions, and half of these, including 4000 tanks, were in the central sector trying to smash a path to Moscow through Mozhaisk and Maloyaroslavets, suffering heavy losses all the time. Towards the end of Oct. the Russians were compelled to evacuate Stalino, an important armament centre in the Donetz basin. Other important towns lost were Kharkov and the railway junction of Bielgorod. The loss of the industrial centres of the Donetz Basin, such as Stalino, was serious.

The position in early Nov., following the setting in of snowy conditions alternating with heavy rain, so that tanks and motorised columns were bogged, was that the Russians had been compelled to make a considerable withdrawal in the Crimea, while holding the attackers on the Moscow front. But at least they denied the Germans much advantage from their conquests. The advancing enemy hordes, instead of finding cities of plenty, with warm accommodation for their troops during the winter campaign, came always upon a scene of utter desolation. On 3 Nov., however, the Germans began their 5th attack on Moscow, using strong tank forces and large numbers of dive-bombers. But they were soon forced to abandon their characteristic tactics of going all out for a breach with a large armoured force backed by motorised infantry and to launch attacks in the old manner, with a small tank detachment followed closely by infantry advancing on foot. The inference was that they did not hope to break through and that their armoured divs. were below strength. Their main blows were at Kalinin and Tula; but they made no headway and attributed their failure to weather conditions. This offensive was the Gers.' first major military error, and possibly marks the real turning-point of the whole E. F. campaign. In the S. von Rundstedt captured Feodosia, a Black Sea port near Kerch Strait, and broke through the ill-fortified Perekop Isthmus.

For a brief space winter brought to a standstill all major operations except those in the Crimea, where in the course of Nov. the Germans overran most of the peninsula, taking the cap., Simferopol, and the naval base of Kerch, and threatening Sevastopol.

Russian counter-offensive.—The Ger. plan, in their 2nd general offensive against Moscow, which had begun in mid-Nov., was to break through the Russian lines and encircle the city with a wide outflanking movement by almost all their armoured and mobile strength, combined with pressure on the front or centre. The desperate Ger. onslaught had, by 26-27 Nov., made some progress W. and N.W. of the city. On 6 Dec. Zhukov launched a counter-offensive against the Ger. forces on both flanks. Both Ger. formations were routed in 5 days' fighting and retreated rapidly. Equally dramatic was the change on the S. front where, early on 29 Nov., the Soviet Fifty-seventh Army of Remizov attacked across the Don SW. of Rostov and launched an assault which carried the Russians back into the city itself. The following night the Soviet Ninth Army under Kharitonov, crossing the Don near Novocheboksak, broke through the Ger. lines and entered Rostov from the NW., thereby almost encircling the Germans. After savage street fighting the remnants of the Ger. forces under von Kleist retreated in disorder towards Taganrog, pursued by the Russians and harried by guerrillas. This was Germany's first serious defeat on the E. F., and was a remarkable vindication of Stalin's judgment in placing Marshal Timoshenko in direct command on the S. sector.

This major Russian victory helped the army of Belov, in co-operation with the forces of Konev, to make further progress in the all-important Tula section at a moment (2-3 Dec.) when Ger. tank thrusts round Mozhaisk were forcing the Russians to retire to new positions. But some few days later the Ger. armies, beaten to a standstill on the whole E. F. by intense cold and deep snow and, above all, by the almost miraculous tenacity and courage of the Russian soldiers, halted their Russian campaign for the winter. Brit. and Amer. aid in tanks, guns, planes, and other equipment contributed to this result: as also indeed did the constant bombing of objectives in Germany and the occupied countries of W. Europe by Brit. airmen, and Gen. Auchinleck's offensive in Libya; for these assaults involved the transfer to W. Europe and N. Africa of increasing numbers of Ger. fighter planes and pilots from the E. F. The Ger. official announcement of their intention to abstain from any major strategic moves during the winter was a momentous one, for their abstinence was forced upon them by the miserable condition of the majority of the Ger. soldiers, who were quailing before the first Russian frosts for which they were ill-prepared in clothing and equipment. From this time the Russian generals took the initiative and throughout the bitterly cold winter months steadily pressed the invaders

back. The Ger. front as at 6 Dec., the farthest point of their advance, ran approximately through Schlisselburg—Novgorod—Kalinin—Rogachev—Moska—Narotorminsk—Serpukhov—Tula—Stalinogorsk—Elets—Byelgorod—Kupiansk—Rostov—Kerch. By the end of Feb. much Ger. had been recovered, the Ger. line being forced back to Kholm, Veliki Luki, Rzhev, Yelnya, Orel, Kursk, Kharkov, Lozovoe and to within a few m. of Mariupol. Kalinin, an important tn on the Moscow-Leningrad railway about 100 m. NW. of the cap., fell on 15 Dec. On 29-30 Dec. Russian troops made a landing in the Crimea and occupied the tn and fortress of Kerch and Feodosia.

The New Year opened well for the Russians, Kaluga, 110 m. SW. of Moscow, being recaptured, while no fewer than 16 Ger. divs. under the Ger. panzer leader, Guderian, were routed. The Russians were also pursuing the Germans from Kerch. On the central Moscow front, Maloyaroslavets, 80 m. SW. of Moscow, fell on 2 Jan. and, 3 days later, the Russians retook Borovsk, and on 19 Jan. Mozhaisk. In the Crimea the Germans retook Feodosia, though Russian pressure was maintained E. and W. of Taganrog. In the centre, following a break through in the Valdai Hills between Smolensk and Lake Ilmen, Veliki Luki, the railway junction and base for von Leeb's forces investing Leningrad, was threatened. Considerable progress was also made in the Ukraine by the armies of Timoshenko, who had begun a new general offensive on 18 Jan. At the same time especially fierce Russian assaults were being delivered on the Leningrad front.

Spring was now at hand. The Germans were striving to maintain a series of large-scale centres of resistance or buttresses, behind which they might keep communications open and, for a time, provision by air-borne supplies. The Russians were penetrating between these strong places, which, in fact, represented a modern or informal version of the ring-fences of the last century. But as yet Vyasma, Orel, Kursk, Kharkov and others still blocked the way, preventing them from using communications essential to the continuance of their offensive and leaving in Ger. hands springboards for the much-heralded spring counter-offensive.

By 1942 allied war supplies were pouring into Russia in ever-increasing quantities via Bandar Shahpur on the Persian Gulf and the Trans-Iranian railway. Brit. and Amer. war equipment was also reaching Russia's Arctic ports in convoys after hazardous passages around the North Cape.

The Battle of Kharkov—Fall of Sevastopol—German Offensive in the Don Region.—The Russians anticipated the Ger. spring offensive by launching (13 May) an offensive, on a 50-m. front, in the Kharkov region. This offensive by Timoshenko was a counter-move to the formidable Ger. drive in the Kerch peninsula, where the Russians were driven back by combined Ger. and Rumanian forces to the coast of the Sea

of Azov. Timoshenko's attack, which, by 17 May, extended along a 100-m. front between Byelgorod and Smilyev (40 m. NE. and 20 m. SE. of Kharkov), aimed at enveloping Kharkov from the N. and S. On 19 May von Bock delivered a heavy counter-attack in the Donetz region around Izyum, 70 m. SE. of Kharkov, and at Barvenkovo, 20 m. S. of Izyum; but massed Russian artillery and anti-tank guns successfully held these formidable thrusts. The Germans made great efforts

Sevastopol fell early in July. A few days later the Germans delivered an attack of great violence from the Kursk-Byelgorod area, due N. of Kharkov—their immediate objectives being the important railways running from Voronezh to Moscow in the N. and to Rostov in the S., and the Don R. They made rapid progress all along the Don from Voronezh to Svobodn, Boguchar and Millerovo, and by mid-July the main battle extended from the junction of the R. Boguchar with the



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A CONVOY OF SUPPLIES ON THE PERSIAN ROUTE TO MOSCOW

to force the Donetz crossings and threatened to cut off large Russian forces in the Izyum-Barvenkovo area, but these forces were relieved by a force of tanks and infantry even larger than that of the enemy. The next great battle was for Sevastopol, which began early in June with air raids on the beleaguered city and the mass concentration of great quantities of siege guns and other artillery. By the last days of June the city area of Sevastopol had been practically destroyed by bombing and shell fire, though the garrison, with forlorn courage, continued to repel waves of enemy infantry and tanks. Elsewhere the position, from the Russian standpoint, was no better, for on the Kharkov front von Bock's offensive was still heavier than in the Izyum-Barvenkovo battle, and the Russians were forced to evacuate Kupiansk, an important rail junction, some 60 m. SE. of Kharkov; but at least Timoshenko's armies still remained intact.

Don to the Sea of Azov, including the Donetz basin, the Russians retiring to their main prepared line, 200 m. long, along the lower Don. Apart from severe fighting round Rzhev and near Orel, the fiercest struggles in the next ensuing weeks were the battles for Rostov and Voronezh. The Ger. advance was most methodically planned and powerfully supported, and the Ger. commander no longer repeated the error of sending tank columns far afield without heavy infantry and artillery support. Notwithstanding losses, the Ger. armies continued to advance and the Russians to fall back. By the early days of Aug. 2 great battles were being fought in the S.—the battles for the Volga and for the Caucasus. Stalingrad, the great riv. port, manufacturing and business centre, was now von Bock's immediate objective. In the N. Caucasus the Ger. forces under von Kleist were threatening the oilfields of Malko and the city of Krasnodar. But grave

and far-reaching as were the Ger. successes in N. Caucasus, it was realised that the battle for Stalingrad was far more momentous. Timoshenko had elected to direct all his limited resources towards the defence of Stalingrad and the Lower Volga.

The battle for Stalingrad and the invasion of the Caucasus.—In the autumn the chief objectives of the Ger. invaders were Stalingrad—a narrow city on high ground stretching for 20 m. along the W. bank of

wore on, the name of the city assumed almost a symbolic significance throughout the free world. The Russians fought on remorselessly, contesting every yd of advance. A new Ger. offensive, however, began from the SW. of the city on 31 Aug. after a brief lull following the almost complete destruction of von Kleist's 14th Panzer Div. at Kotelnikovo. For hrs the defence stood firm and the Ger. attacks broke against the Russian heavy guns and mortars. NW. of the city von Bock



Soviet Weekly

RED ARMY MEN ATTACKING IN A RUINED FACTORY IN STALINGRAD

the Volga—the Grozny oilfields, and the Black Sea port, Novorossiisk. The Germans were not able to attack all along the E. F., as they had done in 1941; instead, they adopted the plan of concentrating their maximum strength in the S. on very narrow fronts and elsewhere acting on the defensive, notably at Voronezh and at Rzhev. The main object of the Ger. offensive of 1942 was, however, not the occupation of the oilfields, but to outflank Moscow from the E., to cut off Moscow from the Urals, and then to strike at the city itself. In connection with the thwarting of this plan the importance of the Russian attack at Voronezh cannot be overrated. In the vicinity of Rzhev Zhukov delivered an effective counter-offensive in the triangle formed by Gzhatsk and Vyazma with Rzhev. Further N. there was occasional activity in the region of Lake Ilmen. But it was the battle for Stalingrad which dominated everything, and gradually, as the months

delivered an equally determined attack, but met with still stiffer resistance. In the general result, however, this double threat to Stalingrad had become gravely accentuated by 3 Sept. Von Bock had received orders from Berlin to take the city at all costs and destroy the Russian forces there and in the whole of the Caucasus. Satellite troops, composed of Rumanians, Italians, and Hungarians, were sacrificed remorselessly. By the end of the 4th week of this titanic struggle more than 20 Ger. divs. were opposed by a rather smaller force of Russians. Day after day von Bock used shock tactics in the hope of taking the city after only a short struggle; but he was gradually forced to begin siege warfare. Bitter street fighting followed a Ger. breakthrough into the NW. (17 Sept.). But the Russians were determined to resist to the end and the road of retreat was barred to the defenders by the will of the whole Russian people. Every pile of

rubble, every crater in the broad streets, every window in the battered houses was a Russian point of resistance. Furious air fights went on all day. The city, which had been the especial pride of the Russians, was now a smoking cauldron in which 2 armies were locked in a frenzied struggle for the mastery. The position inside Stalingrad was at its most critical point on 26 Sept., when the garrison found itself being overwhelmed. But at this juncture the 13th Div. of the Guards, under Rodimtsev, reached the E. bank of the Volga opposite the city after a series of forced marches. Some regiments arrived in the N. and some in the S., as the Germans had broken through to the riv. and controlled part of the bank in the centre. This was the period during which the Germans plausibly claimed to have cut the city in two. Both halves of the Guards Div. then attacked and cleared the enemy from the Volga bank, joining up to form the first Soviet line inside the city. From the moment of their dramatic intervention the Russian resistance in Stalingrad stiffened.

A lull only came on the 51st day of the battle. Hist. may well ask how Stalingrad withstood protracted attack by such a preponderance of tanks and infantry, supported always by a greatly superior air force. Guns were the real mainstay of the Russian defence. Their mobility and the open nature of the country allowed them to concentrate in masses on narrow sectors. Thence their fire, often from 3 or 4 regiments at once, converged on the great Ger. tank columns as they streamed across the steppe. As winter approached the Germans' chances of taking the city dwindled. Meanwhile Timoshenko's relief force was slowly advancing from the NW.

In Aug. Gens. Zhukov and Konev had succeeded in cutting the single line between the Rzhev region and the main Ger. armies there and to the SW. But while Zhukov was making headway here in the centre of the E. F., Timoshenko's forces in the S. were forced to withdraw to new positions covering Stalingrad. Meanwhile heavy fighting was also in progress still further S., and late in Nov. the Germans took Nalchik and advanced to Ordzhonikidze and the all-important Georgian military road, which leads directly to Tiflis. But here they were pulled up by a brilliant counter-offensive at Ordzhonikidze and routed in such decisive manner as to end the danger to the Grozny oilfields, at least for the winter. But a still more dramatic change came over the S. Russian front from 19 Nov., when the Russian troops at the approaches of Stalingrad passed over to the offensive both from the NW. and from the S. of the beleaguered city. In a few days they had broken the Ger. line in the NW. on a 20-m. front and on a 15-m. stretch in the S., advancing from 40 to 50 m. On the 5th day of the offensive, Stalingrad's battle-worn defenders were at last relieved, when a Russian army broke through to link up with them from the N. and they themselves then joined

in Timoshenko's great offensive. The result was that the Axis forces were now facing an increasingly precarious position with Russian armies closing in behind them across the Don to the W.

Russian Counter-offensive.—Destruction of German Sixth Army.—Fall of Rostov.—Following orthodox strategy the Germans, in the early summer of 1942, had concentrated their strength for the blow at their main target, Stalingrad, on a 200-m. front from Izyum to Kursk. They drove E. and SE., following the 2 main railways to Voronezh and Rostov respectively, their right fanning out, as it passed the industrial tns of the Donetz, in order to try to encircle the Russians retreating on Rostov. But the Germans were held at Voronezh, and the Ger. main concentration was switched southward to follow the railways to Stalingrad. Thus Rostov was taken and the Germans rushed forward up the Salsk-Stalingrad railway, and it was then that the Ger. High Command boldly broadened their whole plan, abandoning orthodoxy and over-reaching themselves. For they now aimed, not only at taking Stalingrad, but at cutting off Russia from her oil and from her Brit. and Amer. supplies, separating the Central European part of the Soviet Union from the Volga and the Ural area and surrounding and taking Moscow, and so putting the Russian armies out of the war. But the Russian High Command had observed that the Ger. troops were really insufficient for the 900-m. front N. of Kursk and, behind these lines, the Russians were left in comparative peace to withdraw and train and move reserves as they chose. In sharp contrast to the Ger. was the Russian strategy, which aimed at surrounding and routing the Ger. forces on the approaches to Stalingrad. This plan was effected in Nov.-Dec. 1942 in 3 stages. The 1st was the Russian offensive NW. and SW. of the city, which has been described. The 2nd stage was the Russian offensive in the area of the middle Don (16-30 Dec.). The Russian troops here were assigned the task of penetrating to the rear of the Ger. troops in the Don bend and preventing those Ger. troops which were surrounded on the approaches to Stalingrad from escaping or being relieved. The 3rd stage was the Russian offensive S. of Stalingrad. With the aim of relieving their Stalingrad army, the Germans concentrated a considerable force N. of Kotelnikovo, and on 12 Dec. launched an offensive. The Soviet troops, however, routed this new concentration, rolled the Germans S., and so deprived them of the last chance of breaking through to the encircled Sixth Army. By the end of Jan. 1943 the Russians had completed the destruction of the Ger. Sixth Army, commanded by von Paulus. Famine, disease, and Russian bombs and gun-fire had, by mid-Jan., reduced an army of over 300,000 to between 70,000 and 80,000 men. Those that remained rejected a Russian ultimatum to surrender and the Russians then launched a new and final attack of annihilation. On 31 Jan., the Russians captured von Paulus and the remnant of

the Sixth Army. Catastrophic losses in equipment and prestige, apart from the loss of men, were incurred by the utter collapse of the Ger. Stalingrad expedition. On this same day the Ger. position in the Caucasus was rendered still more precarious by the loss of the junction of Tikhoretsk and the clearing of the Malkop oilfields. A confident Ger. army, flushed with victory, experienced a transition from a wholly offensive to a wholly defensive force. Certainly winter conditions were partly responsible for the change in mind, but the chief factor was just as certainly the Russian method of offensive warfare, which the Germans had not previously experienced.

Gens. Vatutin and Golikov were now attacking westward and driving the Ger. forces out of the Don bend; while, soon afterwards, Eremenko (commander of the SW. front in the Stalingrad battle) and other generals attacked again from the Kotelnikovo region towards Salsk and Rostov, and before even this attack had reached its height, another army on the Voronezh sector forced the Germans and Hungarians to retreat rapidly and yield essential railways. And at the same time the Russians were prosecuting operations on the middle front so that the Germans were unable even temporarily to weaken that front by sending reinforcements S. In one of these central front attacks the Russians captured Veliki Luki, a most important stronghold, and in another they reduced Schlüsselburg, the fortress in eastward of Leningrad, and so reopened a land-corridor to the long-besieged garrison and inhab. (see further Leningrad). Altogether less dependent on railways than the Germans, the Russians, accustomed to large-scale operations across their native winter countryside, were now demonstrating that their soldiers were not only better officered for such warfare but were more than a match for Ger. soldiers on the open steppes. The next places to fall were Izyum in the Kupiansk region (9 Feb.), Stary Oskol, 50 m. W. of Voronezh, the port of Azov, 10 m. SW. of Rostov, and, in the first fortnight of Feb., the important tus of Kursk and Byelgorod, the capture of the last-mentioned place increasing the threat to Kharkov from the N., Kupiansk, Lozovaya (increasing the threat to Kharkov from the S.), Bataisk, and Novocherkassk, which brought the Russians to the gates of Rostov, and Krasnodar, a large in which gave them control over the Kuban river country. Thus, by this time the Russians were threatening the entire Donetz basin and the whole of the W. Caucasus, having recaptured in 3 months of winter all the ter. that the Germans had taken in 5 months in 1942. The fall of Kursk and Kramatorskaya removed 2 vital pins on the extreme end of a 220-m. front and, as a result, the Russians now enjoyed a wider freedom of manoeuvre. Flying columns of tanks, motorised infantry, and ski troops all played their part in the complicated moves by which forces, simultaneously attacking from various directions, first encircled and then cap-

tured these strongholds. On 14 Feb. Rostov was taken and on the same day the fall of Voroshilovgrad, 70 m. NW. of



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TROOPS OF THE RODIMTSEV
DIVISION ON RECONNAISSANCE
IN STALINGRAD, WINTER, 1942

Rostov, gave the Russians a key point on the railway to Kharkov. The entire Ger. position in the Donetz basin was now

threatened and Russian forces were closing in rapidly on Kharkov, their successes placing them in an unbroken arc around the city. This great city, the third in importance in Russia, fell to the Russians under Gollkov on 16 Feb.

A new offensive under Timoshenko was launched late in Feb. between Leningrad and Moscow, the Germans being driven out of an area of 900 sq. m. in a few days. The following day Timoshenko captured the stronghold of Rzhev; and the next day, continuing their advance W. of Rzhev, the Russians cleared the whole length of the railway between Moscow and Veliki Luki. The mild winter and thaw, however, stopped further advances by the Russians in the Ukraine. Early in Mar. they were faced with a concentration of 23 Ger. divs.—many brought up from the W. of Europe—on a narrow sector in the Donetz basin and were forced to retreat towards the N. bank of the Donetz. W. of Moscow, however, they made further advances, particularly towards Vyasina, which they entered on 12 Mar., though Ger. resistance around Orel was now stiffening. S. and W. of Kharkov the Russians were being very hard pressed, and by 15 Mar. the Germans had recaptured most of the city. The powerful Ger. recoil of Feb.—Mar. eliminated the threat of envelopment to their armies between the Donetz and the sea and cut off, with considerable loss, some of the advanced Russian columns. But although the Germans had, by the end of Mar., re-established their position along the line of the Donetz to N. of Taganrog, they were not appreciably better off in ter. than when they set out for the Volga and the Caucasus the previous year, and, in their existing situation, this was equivalent to a heavy strategic defeat on the result of the whole period.

The Kursk-Orel battles.—The capture of Kharkov was the high-water mark of the Russian offensive in the Donetz region. At one time, for a fortnight, they held the entire course of the Donetz R. But at this point the unusually early end of a remarkably mild Russian winter left the Russians at a great disadvantage, and their mobility was abruptly checked by ground softened by melting snow. The Germans gained time to regroup and reinforce. Von Manstein, instead of commanding a defensive retreat-force, now drove offensively towards the Donetz and Kharkov, with a strong force brought by rail from the Dnieper bend with ample armour and air support. The Russian positions on the lower Donetz and down the Mius to the Azov Sea remained firm and Voroshilovgrad was still in Russian hands. Between that time and early July there was a lull on the whole front. The only marked activity was in the Kuban region. Here the forces of Gen. Maslennikov were pounding Novorossisk. Then came the spectacular Ger. Kursk-Orel offensive, which began on 4 July.

The ideal aim of this long-prepared offensive, like its predecessors, the offensives of 1941 and 1942, was to smash the

Russian armies rather than merely to eliminate the Kursk salient, and to do so before the Allies might launch their 'second front' offensive in Europe. Judging by the troops and planes engaged and by the armour thrown in, this was the biggest battle of the war up to that time. The progress of the battle was essentially determined by the contest between the Ger. tanks and the Russian artillery and other anti-tank weapons. Air losses were heavy on both sides. But the outstanding feature of the Byelgorod-Orel battle was the tremendous Ger. losses in tanks and the insignificant operational gains. This Ger. offensive differed from those of 1941 and 1942 in that almost from its beginning the Russians, after giving some ground, notably in the Byelgorod region, were soon counter-attacking with great vigour. The first week of this great Orel-Byelgorod battle ended without any climax being reached, though the Ger. right arm made some progress between Byelgorod and Kursk. It was, however, significant that already the Germans were forced to resort to artillery bombardment after their costly armoured thrusts, and that they were even now regrouping their mauled forces. Decisively beaten N. of the Kursk salient, von Kluge now tried to widen the Ger. wedge driven towards Kursk from the direction of Byelgorod; then the Russians, far from being exhausted, suddenly took the offensive in 2 directions, from the N. and E. of Orel. The Russians soon recovered all the ground gained by the Germans on the N. side of the Kursk salient and nearly all their gains in the Byelgorod region. On 4 Aug. the Russians stormed and captured Orel, which restored to them a valuable railway junction and promised the restoration of through rail traffic on the main line from Moscow to Kursk. On the same day Byelgorod was also successfully stormed by the Russians.

The fall of Orel and Byelgorod soon had its effect on the co-ordinated Russian operations further S. in the Kharkov region. The Germans fought for Kharkov with great tenacity, recognising it as the hub of their entire position on the E. F., and, about 10 Aug., they began a series of heavy counter-attacks. But the Russians soon fought the whole of the counter-attacking armies to a standstill, and as their corridor of retreat was now narrowed to only 20 m. the Germans evacuated the city. Meanwhile in the Donetz basin, S. of Izum and SW. of Voroshilovgrad and in the N. near Briansk, the Russians continued to develop their offensives.

The Donetz Basin overrun.—The Germans evacuated Taganrog on 30 Aug. The withdrawal was a preliminary to their gradual evacuation of the entire Donbas; for Taganrog was one of the corner-stones of their defences in that area and its abandonment made a withdrawal also from the Kuban and the Crimea a matter for urgent consideration. The Russians made their next big advance in the Sevska area, taking the important positions of Rylysk and Glukov and penetrating into

the N. Ukraine. They also took Yelnya, a most important fortress in the Smolensk area. This double offensive on the central front was the most extensive the Russians had undertaken since Stalingrad and their largest-scale enterprise in any summer season. With the capture of Sumy the whole of the Kursk region was freed. One large city only, Stalino, now remained to the Germans in the Donbas, their reserves being no longer sufficient to enable them to mount such a counter-attack as that which had retaken Kharkov earlier in the year. Most of their available reserves were now concentrated for the defence of their positions in the region of Poltava and Krasnograd—vitaly important to stem a possible Russian attempt to break through to the Dnieper. Stalino was, however, taken on 8 Sept. The capture of Konotop and Bakhmach N.W. of Kharkov involved a break-through which cut the Germans' main lateral railway and took the Russians appreciably nearer Kiev.

Late in Sept. the Russians had taken Briansk and were advancing on Smolensk. The capture of Chernigov by Rokossovsky gave the Russians complete control of the Desna R. throughout its length, and when, soon afterwards, Poltava fell, the Russians were well advanced towards the Dnieper bend. Smolensk, so long Hitler's H.Q. on the E. F., was taken by storm by Sokolovsky on 25 Sept., a triumph which had a profound psychological effect on the Russian people. Following the fierce 3-day battle which resulted in the capture of Poltava, the Russian forces took Kremenchug, the important rail junction on the E. bank of the Dnieper (30 Sept.), and thus now stood on the E. bank of that great natural defensive barrier, facing Zaporozhe and Kiev. Still further S. they captured Novorossisk, the Black Sea port, after a 5-day battle in which 4 Ger. divs. were routed, and so increased the threat to the Germans in the Crimea.

Dnieper 'Bend' battles.—Early in Oct. the Russians broke through the Ger. defences W. of Veliki Luki and took Nevel, an important rail junction 30 m. SW. of that place. But their main effort was much further S., where their reinforcements were now streaming across the Dnieper and enlarging a number of bridgeheads N. of Kiev. The breaking of the Dnieper Line was the result of a lightning operation that took the Germans completely off their guard. Meanwhile the Germans were driven from their last foothold on the Caucasian mainland. Land and sea operations, together with a terrible pounding from 'Stormovik' planes, finally cleared the Taman peninsula. There was bitter fighting for Kiev, but the main battles of the whole front were those which were developing at ever greater pressure in the Dnieper Bend between Kremenchug and Melitopol. Zaporozhe, the important junction of railways and waterways on the lower reaches of the riv., was captured on 14 Oct. The final storming, on 23 Oct., of Melitopol, the gateway to the Crimea,

after 11 days of street fighting, opened the way across the Nogaia steppes and threatened 1,000,000 Germans still fighting in the Dnieper Bend to the N. and in the Crimea further W. The Russian wedge across the Dnieper had now broadened and deepened into a huge triangle 80 m. wide at its base and nearly as deep, covering hundreds of sq. m. of the W. Ukraine. From its left flank the drive on Dniepropetrovsk had now been launched with strong artillery and tank support along the narrow triangle between the Dnieper and the railway to Krivoi Rog. By 25 Oct. the great industrial centres of Dniepropetrovsk and Dneprodzerzhinsk on the riv. had been taken. On 31 Oct.—1 Nov. the Russian troops cut the land retreat for Ger. forces in the Crimea by delivering a swift blow on the Perekop isthmus, which carried them through the Ger. defences to Armiensk.

Fall of Kiev.—The Russians now held the initiative all along the line, for their blows fell now at one point and now at another, while the Germans, denied the use of strategic railways which were cut at vital centres, were unable to rush reserves to threatened places. It was in these circumstances that Kiev fell in the early days of Nov., and Jitomir (10 m. W. of Kiev) a week later, thereby cutting N. and S. rail communications and carrying the victorious armies of Vatutin within 60 m. of the pre-war Polish frontier; while at the same time heavy Russian blows were being struck at Krivoi Rog in the S. and in the Nevel region farther N.

General Vatutin's advance to Poland. Relief of Leningrad—German Eighth Army destroyed—Fall of Nikopol and Krivoi Rog.—The Russians were now on 2 fronts—Kiev and the Dnieper Bend; secondary fronts were Gomel and Vitebsk further N. Their method was to ring the changes upon these sectors, switching fresh power to one as the strength of the defence increased at another. Thus the Kiev offensive was begun after Ger. reserves had been concentrated at Krivoi Rog; while the Gomel offensive was intensified when the Germans struck at Jitomir (18 Nov.), and at the same time the offensive was renewed in the Dnieper Bend. The Russians had just taken Korosten, the rail junction N. of Jitomir, and Rezhitsa, a centre of communications 20 m. W. of Gomel, when the Germans great counter-thrust to drive the Russians off the Kiev-Jitomir road was launched. The Russians fell back stubbornly, but, as indicated above, other Russian forces were soon creating a diversion, and, having reached the Beresina, were threatening Gomel (23 Nov.). Two Russian Ukrainian armies were also active in the 'Bend' in especially fierce fighting S. of Kremenchug. The industrial centre and rail junction of Gomel was seized by Rokossovsky's armies (26-7 Nov.) in a bold by-passing manoeuvre. The next appreciable Russian success was the capture of Znamenska in the 'Bend' by Konev; while in the direction of Kirovograd, a most important position on the lower Dnieper about 20 m. W. of Zna-

men, the Russians were exerting heavy pressure (10-11 Dec.). This fighting in the Bend was well timed, for in the Kiev salient the battles had reached a pitch of great violence in view of the Ger. objective, which was to regain Kiev and restore their fortunes in S. Russia. Meanwhile the Russians had begun a new offensive near Nevel in the N. and in a few days had broken through the Ger. fortified line on a front of 50 m. long and penetrated to a depth of 20 m. The Ger. offensive in the Kiev salient collapsed towards the end of

switch reserves between the points at which major action developed.

But the Ger. resistance in the 'Bend' remained as tenacious as ever despite Vatutin's success further N., for the Germans wished at all costs to keep the Russians out of the Balkans. By a brilliant attack in the 'Bend' Konev seized Kirovograd, before the Germans had time to destroy the tn's installations. Further N. Vatutin's First Ukrainian Army had pushed on into Poland and was advancing on Rovno (12 Jan.).



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RUSSIAN ANTI-TANK RIFLE CREW

Dec. and Vatutin struck back, advancing (27 Dec.) on a 50-m.-wide front. Korosten was recaptured on 29 Dec. by Vatutin in his spectacular westward sweep, thereby giving him a junction of 5 railways. Vatutin's counter-offensive had in less than a week recovered every important point won in 7 weeks' bitter fighting by von Manstein's counter-attacks, with one exception, Jitomir, and that place fell on 31 Dec. By 2 Jan. Bagranyan's troops were at the walls of Vitebsk. With gathering impetus Vatutin's offensive was now sweeping forward on almost all sectors, von Manstein being out-maneuvred and suffering, not so much from lack of men, as from lack of mobility through the loss of strategic railways. Practically all the Ger. successes in Russia from the beginning of the war were achieved by seizing and exploiting the better lines of communication, but by now the Germans were left with few of the excellent lateral railways by which they were previously so often enabled to

Southward of this front, the Russians were driving on Vinnitsa and the junction of Zhmerinka, on the main railway from Odessa to Warsaw. A well-planned out-flanking move gave Rokossovsky possession of Mozyr and Kalinkovichi, the twin Ger. bases in the Pripiet basin in White Russia (13 Jan.). These constituted the main enemy base on this front after the fall of Gomel and Rozhitsa.

Meanwhile, the Russian High Command had been preparing a powerful blow much farther N., around Leningrad. Here they were aiming at the railway between the great city and Moscow, and now advanced to wipe out the salient which for so long had outflanked Leningrad. The new offensive, under Gens. Govorov and Meretskov, was begun in the area of Oranienbaum and in the Volkhov region N. of Novgorod. This anet tn was taken by storm on 20 Jan. SW. of Leningrad the Russian advance overwhelmed the Ger. beachhead along the S. shore of the Gulf of Finland—a stretch of 50 m.—

enabling ships of the Baltic fleet to sail once more and land supplies.

In the whole course of the Ger. withdrawal since the opening of the summer campaign of 1943 no large body of Ger. troops had ever been cut off, and it seemed well within the capacity of the Ger. generals, skilled in defence, to continue the movement without disaster until they could take up their positions on the 'Ostwall' or fortified zone behind the Bug, which they regarded as impregnable. But the renewal of the Russian offensive S. of the Kiev salient and towards Kirovograd in Jan. increased the threat to some 10 Ger. divs. constituting the Eighth Army, based on Kanev, S. of Kiev, the last Ger. foothold on the middle Dnieper. When the Germans were thrust back on either side of Kanev, these 10 divs. were left in a 'pocket,' the 50-m. mouth of which was gradually sealed by convergent Russian movements from E. and W. This salient at Kanev became a fatal trap owing to Hitler's orders to hold out even at the price of annihilation.

Meanwhile in the N., on 26 Jan., Goyorov captured Krasnogvardeisk, the railway junction S. of Leningrad. By the taking of Lyuban and other stations, the whole trunk line between Moscow and Leningrad was cleared of the enemy, except at Chudovo, where, however, the Ger. garrison was surrounded (28 Jan.). Chudovo soon fell to the Russians who were now advancing irresistibly on the great Ger. base of Luga, some 50 m. W. of Novgorod. On 5 Feb. the Russians reached the mouth of the Narva R. and the shores of Lake Peipus.

The position of the Ger. Eighth Army in the Dnieper Bend had changed sharply for the worse by 8 Feb., for all the good airfields were now in Russian hands, and air-borne supplies to the trapped divs. had become meagre. Seven Soviet spearheads of attack were thrusting at the doomed army which was now compressed within an area of less than 250 sq. m. and with 90 m. of front to defend. An ultimatum was sent by Konev calling on the Germans to surrender but, acting on Hitler's order to stand and die, they rejected the ultimatum. Some 52,000 Germans were killed in the Kanev trap or pocket and 11,000 were taken prisoner. The sequel to this victory was the capture on 22 Feb. of Krivoy Rog after heavy house-to-house fighting.

The destruction of the Dnieper bend 'pocket' at Korsun removed a handicap to the development of the Russian plans, which were necessarily directed to cutting the Odessa-Lwów railway, and released a large force for an advance towards the Bug. It was at this time that the victorious Vatutin fell ill (he d. in April), and his place was taken by Zhukov. Zhukov's dramatic intervention soon brought material results in a great break-through between Shepotovka and Tarnopol on a 100-m. front. Zhukov's offensive threatened to force von Manstein back against the Carpathians and the Rumanian frontier. Meanwhile, further N. the Russians captured Staraya Russa, S.

of Lake Ilmen (18 Feb.), and, with the seizure of Rogachev, Dno, and Vitebsk on the route to Pskov a week later, were threatening the Ger. lines of retreat n. White Russia.

The Germans were, however, allowed no respite, for the armies under Konev (Second Ukrainian Front) in their turn resumed the offensive further S. and also broke through on a 100-m. front, crossing the Bug and taking Uman and Kristinovka, and heavily defeating 14 Ger. divs. (5-10 Mar.). Then, soon afterwards, forces of the Third Ukrainian Army under Malinovsky, having forced the Dnieper, stormed Kherson (13 Mar.), which constituted a powerful base of resistance at the mouth of the riv. Konev, having broken through on the Bug front, was now pressing without pause towards the Dniester valley and Bessarabia. By 20 Mar. his troops were across the Dniester, having forced the riv. on a stretch of 30 m. and captured the Moldavian tn. of Soroka. The rapidity of his advance is shown by the fact that, on reaching Ryshkanovka (Rascani), he had advanced 200 m. from the positions on the Dnieper where only 7 weeks previously his guns were firing on the Ger. positions at Kanev. The fall of Zhmerinka and the isolation of the great hedgehog stronghold of Vinnitsa removed the danger of a Ger. counter-thrust against Russian units advancing on Mogilev-Podolski. Both the latter and Vinnitsa fell to the Russians soon afterwards.

Meanwhile, for the past fortnight von Manstein had been making strenuous counter-attacks in the Tarnopol-Proskurov region, hoping at least to retain the railway between the 2 tns. Then suddenly Zhukov struck again on a wide front on sov. sectors at once, broke through the Ger. defences in the Tarnopol-Proskurov region and swept forward from 40 to 60 m., forcing the R. Pruth and closing in on Kamenets-Podolsk and Proskurov.

Ploesti was the prize for which the Russians were driving across the rivs. of the Ukraine and Bessarabia. Before the end of Mar. Konev's troops, having crossed the Dniester on a front of 110 m., reached the Pruth for 50 m. of its course. Kamenets-Podolsk, centre of Ger. resistance N. of the Dniester, was stormed by Zhukov's tanks and infantry, thus cutting the only railway left for the retreat of the Germans in the Proskurov area. At the same time Malinovsky's forces captured Nikolaiev, the Black Sea port on the mouth of the lower Bug—the last tn. held by the Germans on the l. b. of the riv. The Russians soon forced the Pruth, and on the last day of Mar. Zhukov took Kolomea, 45 m. NW. of Cernauti. Cernauti fell the next day. Zhukov's and Konev's forces had now joined hands, and all 3 Ukrainian armies were moving simultaneously. Ochakov fell in a sea and land attack to Malinovsky on 31 Mar. In close co-ordination the armies of Zhukov and Konev drove the enemy from Bukovina and took up positions on a 180-m. front from the Yablonica Pass in





the Carpathians to a point on the Sereth 50 m. NW. of Jassy. Thus the Russians had now reached the borders of Czechoslovakia, and among their forces was a strong Czechoslovak brigade under Gen. Svoboda. On 10 April Odessa fell to Malinovsky. On the same day Tolbukhin's Fourth Ukrainian Army launched a new offensive against the Crimea from the isthmus of Perekop while Eremenko's Independent Maritime Army was advancing eastward from the Kerch peninsula. The feature of this campaign for the retaking of the Crimea was the rapidity with which the Russians overran the peninsula. On 13 April Eremenko captured Feodosia on the Black Sea while Tolbukhin took Eupatoria, and then Simferopol, cap. of the Crimea and main base of Ger. resistance covering the ways to the harbours on the S. shores of the Crimea. Tolbukhin then struck straight through the mountains S. of Simferopol to the coast, and soon both his and Eremenko's forces were closing on Sevastopol. But the main object of this whirlwind Russian campaign was not so much the recapture of ter. as the destruction of the enemy divs. rashly left behind by von Manstein for the defence of the Crimea.

Eremenko captured the port of Yalta, 30 m. from Sevastopol, on 16 April, and the battle was now restricted to a struggle for Sevastopol and the Khersones headland. Meanwhile the lower Dniester was forced at many points in the direction of Kishinev. Bombers of the Red Air Force made a heavy attack on the railway junction of Galatz (17 April). Allied bombers, based on It. airfields, were also attacking places in Rumania and Bulgaria. But it was essential to get Sevastopol and so free the armies of Tolbukhin and Eremenko. By 19 April the Russians, breaking through precipitous rocks, reached the aqueduct S. of the city, thus completing the arc round its landward sides and bringing the whole city and port under their artillery fire.

Fall of Sevastopol—German débâcle in the Crimea.—In 29 days the whole Crimean campaign was at an end and the Germans and Rumanians driven out of the peninsula. Sevastopol, which earlier in the war the Russians had defended for 250 days, fell to Tolbukhin's forces within a week from the moment when the Russians, on 6 May, began their attack on the Belbek line. The Russians took the tn by storm after breaching the defences on the Sapun Ildge. The loss of the Crimea and the destruction of a force of 200,000 men was a Ger. disaster almost as great as that of Stalingrad.

Russian offensives in Finland and White Russia—Fall of Minsk and Vilna.—While the Anglo-Amer. forces were invading Normandy in 1944 and advancing northwards in Italy, Stalin was preparing new and decisive blows against the Germans on the E. F. He began with an attack on the Karelian Isthmus, Finland, in mid-June, to remove the persistent menace to the N. flank of the Russian front. In a week the Mannerheim Line was broken. Govorov soon captured

Vilpuri, where the enemy's chief lateral line of railway met the coast.

A few days later the Soviet armies began a great enveloping movement against the Ger. divs. concentrated in the fortified zone of Vitebsk, and on 26 June, after forcing the W. Dvina, they carried by assault the tn of Vitebsk, an important regional centre. This proved to be the opening gambit of a Russian attack on a massive scale which was soon destined to have deep repercussions. Already the attack extended from N. of Vitebsk to Zhlobin, a front of 200 m. Along this impressive front from the Karelian Isthmus to the Pripet the order of battle was: Leningrad front (Govorov); 2nd Baltic front (Eremenko); 1st Baltic front (Bagranyan); 3rd White Russian front (Cherniakovsky); 2nd White Russian front (Zakharov); and 1st White Russian front (Rokossovsky)—in all 6 great army groups, not counting that of Meretkov. Bobruisk was captured on 29 June by Rokossovsky. Rokossovsky's blow was a decisive one, for it doomed the Ger. defence at the White Russian cap. of Minsk.

Minsk, the great bastion of the Ger. front N. of the Pripet, was captured by the forces of Cherniakovsky and Rokossovsky on 3 July; while farther N. still the Russians had fought their way into Polotsk, pivot of the Ger. positions defending the Baltic coast.

The swift Russian advance westward threatened the important railway junction of Vilna, the loss of which would disrupt the Ger. Baltic and central F.s and lay E. Prussia open to attack by the triumphant Soviet armies. On 13 July Vilna fell to the Red Army. On the next day the capture of Pinsk and of Volkovysk (2 outposts of the Ger. line covering Warsaw) increased the Red Army's threat to the strategic junctions of Bialystok and Brest Litovsk. Between Dvinsk and Vilna 2 Russian groups had now joined hands and 25 m. W. of Vilna were marching on Kaunas, which, with Grodno, formed the other great bastion defending the E. border of E. Prussia.

Marshal Konev's advance into Poland.—

Fall of Pskov.—In 3 days' fighting (16–18 July) troops of the 1st Ukrainian F. led by Konev—who had assumed command in place of Zhukov—broke through the Ger. defences E. of Lwów on a 120-m. front and advanced 30 m. Further, on 18 July Russian troops N. and S. of Alytus fought for the expansion of their bridgehead on the W. bank of the Niemen. Blows now fell thick and fast along the E. F. generally. On the 19th the forces of Eremenko and of Bagranyan broke through strong defences on a 43-m. front towards the Latvian border S. of Ostrov and, towards Dvinsk, penetrated 5 m. inside the border. Farther S. Konev's forces in the advance on Lwów completed the encirclement of a large enemy group W. of Brody. In yet another new offensive next day, from Kovel, they made a 90-m. breach in the Ger. defences, and in 2 days swept forward 30 m. to the W. Bug R. The Germans were now in precipitate retreat from

long cherished positions designed to protect the roads to the Baltic, to Warsaw, and to Germany itself. Pskov, the stubborn N. barrier to the Baltic reps., was taken on 23 July, 2 days after the fall of Ostrov. Its fall marked the liberation of the last city of the Russian Rep. from the Ger. invader. 22-3 July saw, indeed, the most remarkable advance of the war, a veritable Russian tidal wave on an immense frontage. All along its tn-strongholds of the first importance—Dvinsk, Kaunas, Bialystok, Brest Litovsk, and Lwów—were now in the utmost peril. In Estonia there was every chance of isolating the Ger. divs. under Lindemann. The Germans had been holding the line from Lake Peipus to Dvinsk with the greatest obstinacy, knowing that if they lost their hold on the lake their strongly-defended front to the N. of it would become useless. But now, with the loss of Pskov, it looked as though their link with Lake Peipus would soon be snapped, and, if that happened, the Russians could push on towards Riga.

Russians take Przemysl, Brest Litovsk, Bialystok, and Kaunas.—By taking Siauliai (Shavli), the key junction in Lithuania, the Russians cut the main link between the Ger. armies in Estonia and Latvia and East Prussia (27 July 1944). Dvinsk and Rezekne in Latvia and Lwów and Stanislawow in Poland were occupied. The next day 3 more of the remaining Ger. strongholds fell—Przemysl, Yaroslavl, and Brest Litovsk. In these days of a rapidly-changing front the Ger. High Command was outwitted by the unorthodoxy of Russian strategy. The Ger. generals, unable to be uniformly strong all along the line, especially with dwindling reserves, left those parts of the front more thinly guarded which might seem, from the Russian standpoint, to be unsuitable and costly for large-scale offensives; but it was precisely at these points that the Russians launched their main attacks—at Przemysl, Lublin and westward in a direct line for Warsaw. Impressive as were the victories at Dvinsk and Pskov at one end of the front and of Lwów at the other, nothing was so spectacular as the tremendous Russian surge into the middle of the Polish plains. In the Baltic States Bagramyan's advance into central Lithuania forced the Ger. plan to form a strong line on the Dvina and thereby keep open the road for Germany's Baltic armies into E. Prussia. Protecting Bagramyan's right flank was the army of Eremenko, who captured Jelgava (Mitau), the main communication centre between the Baltic area and E. Prussia. Farther N. other Russian forces crossed the Estonian border and advanced along the Pskov-Riga road and the Valka railway. Kaunas (Kovno) was stormed on 2 Aug. The Russians were now massing forces on the Vistula and Nemen for the invasion of E. Prussia and, possibly, of Cracow. Meanwhile Rokossovsky's troops were heading NW. to Warsaw. Very heavy fighting now threatened on the E. F. generally. For the prizes at stake were great: 2 trapped Ger. armies in the Baltic; the 'sacred soil'

of E. Prussia; Warsaw, Cracow, and Silesia; and the Carpathian passes.

The Battle for Warsaw—Armistice with Finland—Russian offensives in the Baltic States.—The stiffer Ger. resistance caused a check to the Russian attacks before Warsaw, against E. Prussia, and in the Baltic States. The situation in Warsaw itself was obscure. Relying, apparently, on the approach of the Russian forces, the patriots rose against the Germans and were soon in possession of many key-points. They were commanded by Gen. Thaddeus Bor-Komorowski, known as Gen. Bor. But at this juncture the Germans strongly reinforced their E. F. with a great accession of armour, and the attacking Russian forces received a severe set-back. Meanwhile, however, the plight of the Poles inside Warsaw was daily growing more desperate. Allied airmen dropped light weapons for their use, but the Russians refused the use of air-fields E. of Warsaw to facilitate and increase their supplies. The Russian Command contended that the rising in Warsaw was premature and contrary to their orders; but it is more probable that the political conflict between the Polish gov. in London and the Polish liberation committee formed in Russia had its influence on the position (see further POLAND).

An armistice was arranged between Finland and Russia on the morning of 4 Sept. The armistice was not actually signed until 19 Sept. when the Finnish delegation reached Moscow. Under its terms Finland lost both Karelia and the Petsamo area—which latter was still held by the Germans.

Near Warsaw, the Russians had captured part of Praga after some 6 weeks of violent battle. But Warsaw as yet was far from falling to the Russians, and on 3 Oct. the Polish underground army, starved and its supplies exhausted, gave up the struggle.

According to Gen. Bor's disclosures in 1948 the Soviet armies for 60 days passively watched the destruction of Warsaw and the massacre of its Polish defenders and inhab. The prin. difficulty which faced the Polish Home Army of Gen. Bor was that Russia had broken off diplomatic relations with Poland early in 1943, and efforts by Anthony Eden, as mediator, to re-establish relations in view of the Red Army's approach to the Polish frontier were unsuccessful because the Soviet gov. would only discuss renewal with a Polish gov. 'favourably disposed' towards the Soviet Union, and Molotov's reply to Eden was that neither the Polish gov. in London nor the Polish commander-in-chief, Gen. Sosnkowski, fulfilled that condition. On 1 Aug. the city rose against the Germans, not only the date but the precise hr for so doing having been given to the Russians by Mikolajczyk, the Polish premier, who was then in Moscow, and the Russian staff was officially notified by the Brit. staff. Within 3 days the greater part of the city had fallen into Bor's hands. Then suddenly the Soviet artillery became

silent and the Soviet Air Force disappeared from the skies. The Soviet radio, which had continually urged the Polish people to rise and free their cap., became suddenly mute. All Bor's efforts to establish liaison with the Soviet High Command, either directly or through London, were unsuccessful. After that the rising gradually collapsed and in. by in. the Germans recovered their lost ground. Capitulation followed inevitably, the Polish losses being more than 15,000 soldiers in addition to thousands of civilian losses.

On the so-called Leningrad F., in mid-Oct., the Soviet armies began a new offensive in the Baltic States, from 70 m. E. of Tallinn, the Estonian cap., to the outskirts of Riga, the Latvian cap., a distance of 200 m. Tallinn fell to Govorov on 23 Sept., the Germans thus losing an important naval base and port in the Baltic. All Estonia was now in Russian hands except for the is. of Dagö and Oesel. A powerful Russian attack in Lithuania NW. and SW. of Shavli broke through the strongly-fortified enemy defences, and in 4 days' fighting the Russians advanced in spectacular manner up to a distance of 62 m., widening the breach in the Ger. F. to 175 m.

New Russian attacks in Rumania—Armistice with Rumania.—First attack on East Prussia.—Russian invasion of Hungary.—Budapest encircled.—Russian troops under Malinovsky and Tolbukhin launched new offensives in Rumania late in Aug. with a view to the capture of the all-important Ploesti oil fields and the elimination of both Rumania and Bulgaria from the war. On 23 Aug. Rumania sought an armistice which, with the approval of Great Britain and the U.S.A., was granted by the Soviet Union. It now remained for the Russian gens. to expel the Germans and their satellite troops. Ploesti fell on 30 Aug. after a remarkably rapid advance by Malinovsky's troops, while a few hrs previously the port of Constanza was captured by Tolbukhin. On 31 Aug. the Russians entered Bucharest. Advancing up the Danube valley parallel with the Bulgarian frontier, the Russians reached that frontier between Giurgiu and the Black Sea. It was plain that Russia would tolerate no further Bulgarian aid to Germany. Bulgaria's attitude throughout had been treacherous and equivocal. She had long since declared war on Britain and the U.S.A. but had pretended to be neutral towards Russia while giving the Germans every kind of aid short of sending combatant troops against her. Meanwhile effective co-operation had been estab. between the Red Army's tanks advancing up the Danube and the partisan forces of the Yugoslav National Army of Liberation under Tito. S. of the Iron Gate Brit. and Amer. land, sea, and air forces, too, were co-operating with Tito's army to destroy Ger. escape routes. The other great wave of the Russian advance beating upon the barrier of the E. Carpathians had penetrated from the N. into Transylvania. Other columns crossed the Transylvanian Alps and closed in on Cluj the cap., which

had a mixed Ger.-Hungarian garrison controlling communications. From W. Rumania strong Russian forces under Malinovsky were now thrusting into Hungary itself and, by early Oct., were within 100 m. of Budapest. Thus the mt. ramparts guarding central Europe had been largely overcome and the Red Army had penetrated deep into the Hungarian plain. Russia's chief concern about Bulgaria was to cover the flank of the Red Army during its advance towards Yugoslavia and Hungary, and therefore war was declared on Bulgaria, which country promptly replied by vainly seeking an armistice. But the next day (9 Sept.) Russian troops crossed the Rumanian-Bulgarian frontier and occupied Rustchuk, Silistria, and the Black Sea port of Varna. Then at length Bulgaria declared war on Germany and accepted Tolbukhin's demands that Ger. soldiers in Bulgaria be handed over as prisoners together with all Ger. ships in Bulgarian ports. These developments left the Red Army forces free to continue their advance through N. Transylvania, for although Rumania was out of the war the Germans were by no means out of Rumania. There was now in progress a double Russian offensive in Yugoslavia, S. and N. of Petrovgrad, in co-ordination with Tito's operations, which augured well for the early liberation of Belgrade (5 Oct.). On the same day Brit. and other allied forces landed on the Gk mainland and captured Patras and, soon after, Corinth.

Late in Oct. 1944 Cherniakovsky broke through long-prepared defences into E. Prussia for some 20 m. on an 85-m. F., his offensive extending many m. N. and S. of the Kaunas-Insterburg-Königsberg railway. But thereafter the offensive was stopped by repeated Ger. counter-attacks, made regardless of heavy casualties. Meanwhile, at the end of Oct. 3 groups of Russian armies were advancing in the general direction of Budapest. Cluj, the cap. of Transylvania, was taken by Malinovsky on 11 Oct. Towards the last days of Nov. Tolbukhin's army crossed the Danube N. of the Drava and broke through on the W. bank of the Danube on a 90-m. F. to a depth of 25 m. After this followed a month of very obstinate resistance to the Russian invasion of Hungary, but, at the beginning of Dec., the Russians pierced the Ger. line in S. Hungary guarding the way to Lake Balaton and the road up the W. side of the Danube to Budapest. This drive by Tolbukhin from the S. was co-ordinated with the other drives on Budapest from the E. and NE. Tolbukhin was now advancing northward up the Danube valley. Meanwhile Malinovsky had gained control of the SE. shores of Lake Balaton. It was a considerable achievement to cross the Danube (which at this point is a m. wide) by means of pontoon bridges brought up under cover of darkness almost entirely by hand. By Christmas the main forces of the combined armies of the 2 Russian marshals were investing Budapest, their advanced elements entering the outskirts from the W.

and NW. But still the city did not fall.

German occupation of Greece ended.—*Civil War in Greece.*—In Greece rival resistance groups were fighting one another in the winter of 1943-4. The resistance groups were persuaded to cease fighting in Feb. 1944, and in Sept. all placed themselves under the orders of Ger. Scobie, who had been nominated G.O.C. in Greece. The Germans evicted Greece in Sept., their position being hopeless in face of the Russian advance in the Balkans; and when Brit. and Gk regular forces landed early in Oct. they encountered only rearguards. Fighting soon broke out again between pro-Communist and anti-Communist Gk resistance groups, in which Brit. troops became involved, being for a time hard-pressed. But as the days passed Brit. reinforcements arrived from the It. front. Street by street Athens was cleared of Communist rebels. (See further GREECE—History.)

Stalin launches his general offensive in South Poland, Upper Silesia, and East Prussia.—By mid-Jan. Stalin was satisfied that he could maintain the momentum of an offensive which should have as its immediate objectives the capture of industrial Silesia and the over-running of all W. Poland and E. Prussia, and also the invasion of Brandenburg and Pomerania, with remote objectives in Stettin and Berlin, and the destruction of the whole Wehrmacht. The defeat of von Rundstedt by Montgomery and Bradley in the W. prevented the 6th Armoured Div. from being turned E. for the defence of the E. F., while the diversion of the floating Ger. armoured reserves to Budapest and Latvia, instead of monacing the S. and N. flanks of the projected Russian offensive, merely resulted in a fatal dissipation of Ger. reserves and in the locking-up of their armies of E. Prussia and the Baltic, while effecting nothing in the attempted relief of Budapest. At the start of the Russian offensive, the Germans disposed about 150 divs., of which no fewer than 50 were in the Baltic States and on the Danube. The Russians in the first 2 or 3 weeks of their amazing attack advanced at twice the rate of their advance in the summer, or a total average distance of over 200 m., and in that short space of time they had overrun a large part of Upper Silesia, swept through the whole of W. Poland, and isolated E. Prussia. The great offensive was opened by Marshal Konev's 1st Ukrainian front from the Sandomierz-Baranov bridgehead on the Upper Vistula—a bridgehead he had held since Aug. The Ger. prepared positions were so completely overwhelmed that in 2 days the Russians broke through to a depth of 25 m. Before Konev's army now lay the open plain of S. Poland, terrain well-suited to the movement of armoured and mechanised forces. Beyond this plain lay the road to the Ger. border.

On 14 Jan. Zhukov's 1st White Russian army assumed the offensive on 2 fronts on the W. bank of the Vistula S. of Warsaw from the Pulawy-Warka

sector with massive artillery support, and soon broke through the enemy's powerful deeply-staggered defences. In 3 days the 2 fronts linked up and advanced 37 m., having extended the breach in the Ger. lines over a front of 74 m. while over-running the strongly-fortified Ger. defence points of Warka, Grojec, Solec, Zwolen, and Jedlinsk, and occupying more than 1300 other tns and vils. Soon afterwards Zhukov's troops carried by storm the important industrial and communication centre of Radom, 60 m. S. of Warsaw, and a strong bastion in the enemy's defence system. This immensely powerful blow was skilfully co-ordinated with Konev's attacks to the S., so that the 2 most formidable Russian army groups were now striking W. along a massive F. of 120 m. on the shortest road into Germany. Almost simultaneously with the opening of Zhukov's attack, Rokossovsky began an attack NW. of Warsaw, carrying by storm the bastion of Przasnysz and the in and fortress of Modlin.

Warsaw fell at this time to Zhukov, and the road to Lodz lay open to the Russians. Meanwhile Konev had taken Piotrkow, an important stronghold in the direction of Lodz. Two days later Konev, advancing W. of Czeszochowa, broke through strongly-fortified defences on the SE. border of Germany and advanced into Ger. Silesia on a 60-m. front, capturing Kreuzburg, Rosenberg, Guttenberg, Landsberg, and Pitschen—all powerful strong-points in the defences covering the roads to Breslau. At this date yet another offensive was in progress, this being the advance of the 3rd White Russian front under the Jewish gen. Cherniakovsky, who carried by assault Tilsit, the largest tn in the N. frontier zone of E. Prussia, and Gumbinnen, the important junction and stronghold in the enemy's defences in the Königsberg direction. Rokossovsky, co-operating with this army, had now crossed the E. Prussian border in the S., and captured Tannenberg.

By 20 Jan. Zhukov's group of armies, which included the greatest accumulation of armour ever seen on the E. F., had passed more than 100 m. from Warsaw and stood over half-way to Poznan, the last of the historic cities of Poland still held by the enemy. Powerful blows by tanks and infantry overwhelmed the garrisons on the way to Torun (Thorn) and Bydgoszcz (Bromberg), tns of Posen prov. Lodz fell at the same time, and so swift was Zhukov's advance that the city was taken intact with all its great textile factories. Cracow, too, which fell to Konev at this time (22-3 Jan.), also escaped Ger. demolition. Large gains of terr. were made on 22 Jan. by the Russians in their double advance into E. Prussia from the S. and E. By the capture of Allenstein (Olsztyn) Rokossovsky had reached the heart of the prov. while Cherniakovsky, advancing from the E., captured Insterburg. By the capture of Allenstein the Russians cut the main railway from Berlin to the Baltic States. At the same time the Russians also took Osterode, 22 m. SW. of Allenstein, and

Deutsch Eylau, powerful Ger. strongholds. Yet a 5th Russian army group, that under Gen. Petrov, was now advancing along the N. slopes of the Carpathians and Tatra Mts in Slovakia, with the intention of securing the Carpathian passes and reaching the E. approaches of the Moravian gap along the N. slopes of the Beskids.

Konev reached the Oder on 23 Jan. on a 40-m. front in the area of Breslau. On the same day Zhukov captured Bydgoszcz by a combined frontal and encircling move. Large Ger. forces had taken up positions to challenge the Russian advance SE. of Poznan, but Zhukov bypassed them, leaving them to be forced into the salient between his and Konev's fronts. Nothing could stay the Russian offensive. On the 24th Konev seized Oppeln, the cap. of Upper Silesia, and advanced to within 5 m. of Breslau on the SE. Simultaneously other forces of Konev cut the railway from Breslau to the N. by taking Rawicz and Trachenberg. Gradually it was being revealed that the Red Army's triumphs were due not so much to superiority in numbers or to the Ger. blunder in reducing their armour to a dangerously low level as to the advantage the Russians enjoyed in having a better equipped and swifter moving fighting force, commanded by gens. of greater ability than the Wehrmacht. On front after front the Germans were out-generalled, out-maneuvred, and out-fought.

Rokossovsky reaches the Gulf of Danzig. —Zhukov invades Pomerania and Brandenburg.—Fall of Budapest, Danzig, and Königsberg.—In a few sectors Ger. resistance stiffened, notably in the region S. of Elbing and to the E. of Königsberg; but the Ger. divs. were fighting separately without plan; while in some resistance was stubborn, in others submission was prompt. On 26 Jan. Rokossovsky's forces captured the E. Prussian tns of Marienburg and Mühlhausen and reached the Gulf of Danzig, thus cutting off the E. Prussian garrison from central Germany. At the same time the other invading army, under Cherniakovsky, seized Allenburg, Tapiau, Lötzen—strongholds in the Ger. defence zone constructed over a long period and covering the approaches to the central dists. of the prov. In the Breslau area on the same day the Red Army crossed the Oder at sev. places, while Zhukov's armoured forces were now only 100 m. from Berlin. This stupendous offensive had thus carried the Red Army in some places more than 250 m. from their starting points on 12 Jan. There was no hope of a planned withdrawal by the Germans; yet they had been well aware that the offensive was coming, and, for sev. months, they had strengthened the fortifications along the entire Vistula line and all over E. Prussia.

Zhukov's forces broke into Ger. Pomerania on 29 Jan., while Cherniakovsky advanced to within 2 m. of Königsberg. One consequence of the smashing of the stronghold of E. Prussia was the fall of Memel, the garrison of

which was being supplied along the Kurland Spit. The linking up of Rokossovsky's forces and those of Zhukov in the Bydgoszcz area led to an immediate improvement in their positions in relation to the Danzig-Berlin railway. Zhukov's troops on the banks of the Obra, in the prov. of Poznan, decisively cracked the Obra defence line, forced the riv. and then advanced rapidly along the Netze valley and across Brandenburg. They burst through the Netze-Draga lines on 31 Jan., carrying the Red Army across the Danzig-Berlin autobahn and the main railways connecting the 2 cities. Despite ferocious Ger. resistance in Pomerania, the main Russian forces bit deeply into the fortified zone extending from Schneidemühl along the R. Netze to Kreuz, frost aiding the offensive. Zhukov's central army group, striking along the shortest route to Berlin, was now about 30 m. deep into E. Brandenburg and 24 m. from the Oder, the last great water-barrier before the Reich cap. Torun on the Vistula and an important rail junction linking Berlin, Insterburg, Warsaw, and Danzig, which had been surrounded for some time, was taken by Rokossovsky on 1 Feb. On the same date Schneidemühl (90 m. E. of Stettin) was encircled. By establishing themselves at Heidekrug on the Frisches Haff the Russians had now completed the envelopment of Königsberg from the N.

Zhukov was now taking the risk of developing a straight break through the centre and on 1 Feb. he came down from Landsberg to within artillery range of Küstrin, the fortress city at the confluence of the Warta and the Oder, while a parallel column moving from Schwiebus made for Reppen, the last railway station before Frankfurt. On the same day the first big mass of Ger. reserves comprising also Volksturm (Home Guard) was hurled across the path of Zhukov; but the Germans were beaten out of the field in tank actions. Over the entire area E. of a line drawn S. of Stettin along the Oder bank Ger. supply channels were now in great confusion. They were crammed with refugees, columns of army transports, and masses of troops whose orders for battle were sometimes changed in a few hrs as new road and railway junctions fell. Meanwhile Berlin was preparing itself for grim defence and a system of trenches was being dug around the cap. and strong-points prepared in the outskirts. A rapid thaw at the beginning of Feb. impeded Zhukov's attempts to force the passage of the Oder, though by capturing Sonnenburg he was only 5 m. E. of Küstrin. But Konev crossed the Oder SE. of Breslau and in 3 days' fighting extended his bridge-head along a 50-m. front while advancing 12 m.

By the capture on 11 Feb. of Liegnitz, one of the largest tns in Silesia, Steinau, Lüben and other tns, the Russians cut the Breslau-Berlin railway, besides almost surrounding Breslau. This advance of nearly 40 m. carried Konev's armies across the Oder in great strength, besides widening their breach to 100 m. At the same time troops under Rokossovsky

captured Elbing, the second city of E. Prussia; while Cherniakovsky's forces took Preussisch Eylau besides breaking up the strong Ger. defence zone based on that tn and on Kreutzburg and Landsberg. Meanwhile on 12 Feb. Petrov, advancing over the broken and forest-covered country of the Carpathians, stormed the tn of Bielsko, an important bastion in the Ger. defences covering the approaches to Moravska-Ostrava, the N. entrance to the famous Morava Gap. Hunszlau on the Bober fell to Konev on the same date, thus taking his forces to within 75 m. of Dresden.

basin. The same day Zhukov's troops stormed the long-encircled tn and fortress of Schneidemühl, a powerful support-point in the Ger. defences in E. Pomerania.

Russian infantry was moving up in force to the fortified water barrier of the Neisse protecting Saxony and S. Brandenburg, while armoured units had reached the r. b. of the riv. The Germans launched strong counter-attacks between Landsberg and Stargard against Zhukov's armies in Pomerania, but suffered heavy losses. The purpose of these attacks was to try to halt the Red Army's converging movement towards Stettin and the Baltic.



RED ARMY CAVALRY CROSSING A RIVER IN HUNGARY

Soviet Weekly

Budapest fell at last on 13 Feb. after 6 weeks of the most bitter fighting. The fall of the great city was the culmination of a campaign of which the strategic value was obvious. The vast turning movement which brought the Red Army through Rumania and up the Danube valley created a situation in which the Russians were able to sweep across Poland with decisive superiority in armour; for there came inevitably a moment when Malinovsky seemed to be on the point of an advance through the Morava gap and it was then that the Germans felt compelled to transfer a tank army from S. Poland to Budapest. In fact the Red Army's strategists had given the Germans no option, and to describe the Ger. decision as mistaken is to withhold from the Russian strategists the credit due to their enterprise.

Having now shattered the Ger. line of defence on the Bober, Konev's forces on 14 Feb. captured sev. more Silesian tns, including Neusalz, 75 m. down the Oder from Berlin. Konev's armies now held 150 m. of the upper Silesian industrial

Cherniakovsky's troops were advancing along the Bydgoszcz road to Danzig. On the same day (18 Feb.), however, Cherniakovsky was killed. The outline of Zhukov's great salient in the centre of the E. F. remained more or less unchanged for some weeks. Meanwhile the main Russian effort was directed towards Stettin, Danzig, and the Baltic coast generally, in face of bitter Ger. resistance.

On 4 Mar. Russian forces, in a spectacular advance of over 60 m., reached the Baltic at 2 places in Pomerania. Zhukov's troops reached the area of Kolberg, while 30 m. to the NE. Rokossovsky's men reached the coast from Küslin, thereby cutting the Stettin-Danzig road and railway and threatening to isolate both Danzig and the Polish port of Gdynia from the rest of Germany. Next day the main weight of Zhukov's armies, having turned westwards towards the lower Oder, captured Stargard, together with Naugard and Polzin, all powerful strongholds and centres of communication in the direction of Stettin. After very stubborn fighting the strongly-defended tn of Küstrin on the

E. bank of the Oder fell to Zhukov. This was the prin. Ger. strongpoint cramping the Red Army's communications (11 Mar.). Russian forces advancing across the Polish corridor from Pomerania reached Danzig Bay and captured Tczew and Neustadt, outposts of Danzig. Fighting their way along the Frisches Haff to Heide-Waldburg the Russians, on 15 Mar., split the Ger. E. Prussian army group in two.

The main weight of the Russian offensive was now directed to the flanks of the E. F., the immediate objectives on the N. flank being the Baltic ports of Gdynia and Danzig and the city and fortress of Königsberg; on the S., Bratislava and Vienna. On the 27th Rokossovsky's troops occupied a dozen suburbs of Danzig and broke into the centre of the city, besides breaking into the tn of Gdynia. The latter was carried by assault on the next day, thus giving the Russians an important naval base and large port on the Baltic. At the end of the month the Russians completed the capture of Danzig.

Vassilievski's troops completed the capture of the heavily-fortified city and fortress of Königsberg on 9 April. Thus went the most important stronghold in the Ger. defences of E. Prussia. Its capture by the Russians meant that, with the exception of small Ger. groups, the Baltic shore was now entirely cleared, from the Ger. pocket in Courland to the mouth of the Oder opposite Stettin.

Capture of Bratislava and Vienna.—*The Battle for Berlin.*—*Capture of Stettin and Moravská Ostrava.*—In the S. the Germans had staged a tremendous effort to win back ground E. of Lake Balaton, in the vain hope of re-taking Budapest or, at least, safeguarding Vienna, with the view, possibly, of building up an 'impregnable' fortress in the S. of Europe from Munich to Hungary and southward to the It. Alps. But, on 18 Mar., the Russians had struck back in the direction of the Bratislava Gap and Vienna. In a week Tolbukhin's forces were only 30 m. from the Austrian border, as well as driving along the N. shores of Lake Balaton on the way to Slovenia. Tolbukhin crossed the Austrian frontier 50 m. S. of Vienna on 30 Mar., while Malinovsky forced the rivs. Hron and Nitra and took a number of strongholds in the defences in front of Bratislava. Wiener Neustadt, railway junction and engineering tn 22 m. S. of Vienna, was occupied by Tolbukhin on 3 April, together with Eisenstadt, cap. of Burgenland. Bratislava, cap. of Slovakia, was carried by assault by Malinovsky's troops on 4 April and its elimination left him free to advance on Vienna from the E. while Tolbukhin was coming up from the S.

By 5 April the Russians were at the gates of Vienna and had cut the Vienna-Linz highway. Very soon Vienna was almost encircled, for Malinovsky was swiftly advancing along the N. bank of the Danube. On the night of the 6th Tolbukhin's forces fought their way into Vienna after the city had been under shell-

fire for sev. hrs. Tolbukhin's troops, in co-operation with Malinovsky's, after stubborn fighting in a built-up area W. of the Danube, captured all Vienna. The Red Army's tactics saved most of Vienna's celebrated buildings from serious harm. But after the Russians had liberated the city Ger. thermite shells set many famous buildings ablaze. Exploiting their capture of Vienna, Tolbukhin's forces rapidly advanced up the Danube valley, while Malinovsky pushed on between the Morava and the Vienna-Brno highway, the Germans being hustled back across Lower Austria towards Moravia.

Ger. forces in E. Prussia were now (18 April) confined to a 6-m. peninsula enclosing the Frisches Haff and to small parts of the cape between Fischhausen and Königsberg, both areas being packed with men and equipment including what had been evacuated from Danzig and Gdynia.

The Battle for Berlin.—Zhukov began the battle for Berlin. The building up of the striking-force had been in preparation for 2 months; but it was not until Himmler's Pomeranian group of armies had been destroyed, and Danzig captured, that his plans reached their maturity. Reconnaissance activity between 15-17 April increased on the 18th to full-scale battle for the estab. of bridgeheads over the Oder and Neisse. Muskau and Weisswasser, 80 m. SE. of Berlin, were captured by Konev. By the 20th the Red Army was ranged in an arc about 25 m. from Berlin. Two days later Zhukov's and Konev's troops had captured many suburbs of Berlin in advances from sev. directions. From ENE. and N. the armies of Zhukov, and from the S. those of Konev, were inexorably closing all round the doomed Reich cap. During the 22nd over a dozen suburbs were taken. Zhukov had brought a huge force of armour, accompanied by veteran assault troops who had fought at Stalingrad. These were now moving on the E. and NE. periphery of Berlin and in the teeth of fanatically desperate resistance were challenging the Ger. artillery. 'Stormovik' dive-bombers, operating by day and night, were sweeping the Ger. lines from low altitudes and thwarting counter-attacks. The city's military defence was placed under the command of Lieut.-Gen. Heymann, though later it was asserted that Hitler was directing the defence in person. Zhukov's forces, after passing to the offensive from their bridgeheads on the W. bank of the Oder, broke through strongly fortified and deeply staggered Ger. defences covering Berlin from the E. and in less than a week had advanced from 40 to 62 m. During this time they captured the tns of Frankfurt, Wandlitz, Oranienburg, Birkenwerder, Pankow, Friedrichsfelde, Karlshorst, Köpenick, Genningsdorf—all at distances ranging from 15 to 4 m. from the centre. Konev had broken into the city from the S. also through deeply echeloned defences, on the Neisse, and had advanced from 50 to 95 m., occupying the important tn of Cottbus and also Lüben, Zossen, Luckenwalde, Teltow

and others. At the same time in the direction of Dresden other forces of Marshal Konev had reached the Elbe.

When, on 25 April, the armies of Zhukov and Konev joined hands, NW. of Potsdam, Berlin was surrounded and all roads leading westward from the cap. were cut. The Red Army was now striking relentlessly towards the centre of Berlin from N., E. and S. The fighting was bitter in the extreme, each side employing a great amount of artillery, probably greater than was ever gathered together in any battle for a city. The Germans were using all types of artillery for street fighting and the Luftwaffe was now chiefly in battles over the city in and around the huge column of smoke that was rising from its heart. On 27 April the Russians took the suburbs of Spandau, Potsdam, and Rathenau and, in the cap. itself, the industrial dist. of Neukölln, besides the vital airport of Tempelhof. Under the terrific concentration of fire what remained of Berlin after the allied air raids now suffered tremendous damage. Familiar architectural features were fast disappearing in piles of rubble through which the Russians cleared narrow lines for their infantry. At the end of the 8th day (29 April) of the battle in the streets of the cap. the Red Army had ringed the inner area and hacked its way through almost to the edge of the Tiergarten. On 30 April Zhukov's troops hoisted the banner of victory on the Reichstag building. Berlin had become a city of cellar- or cave-dwellers. In the centre fanatics continued their futile resistance—remnants of the Ninth Army, members of the Schutzstaffel, Hitler's personal guards—sev. divs. strong and lacking nothing in ammunition and weapons. On 1 May the Red Army, hoping to be able to celebrate the day with the full capture of Berlin, turned every gun and mortar they could muster on to the small area into which the Germans had now been compressed. The important dists. of Charlottenburg and Schoenberg were cleared the same day. In the midst of this conflict it was announced on the Ger. wireless that Hitler had fallen at his post in the Reich chancellery fighting to his last breath against Bolshevism (1 May) and also that Adm. Dönitz (q.v.) was his successor. It was at this very moment that Himmler (q.v.) had offered immediate unconditional surrender to America and Britain. Dönitz, however, said that he would continue the struggle 'to save the German people from destruction by the Bolsheviks'.

Meanwhile other Russian armies were continuing their rapid advance westward. NW. of Dresden Konev's forces crossed the Elbe on 25 April and, the same day, Vassilievski's troops at last captured Pillau, large port and naval base on the Baltic. Next day Rokossovsky, after new crossings of the Oder, captured Stettin, the Pomerian cap., together with many other smaller tns. Prenzlau, 30 m. SW. of Stettin, fell to Rokossovsky the following day.

It had for some time been obvious that

the W. and Russian Allies would soon meet in Germany. The actual joining hands took place on 27 April on the Elbe in the area of Torgau, NE. of Leipzig, and the significance of the junction was that Germany had now been cut in two. In the 4 months since the opening in Jan. of the final Russian offensive the Germans lost on the E. F. more than 800,000 officers and men prisoners and about 1,000,000 killed.

Berlin Surrendered.—Fall of Pilsen and Surrender of Breslau and Dresden.—German Capitulation on the Eastern Front.—Liberation of Prague.—The garrison of Berlin surrendered on 2 May. Over 100,000 prisoners were taken on that and the next day. Destruction of the encircled Ger. groups SE. of the city was completed the same day. Hitler, it was stated by the Germans, had fallen among the defenders, though later evidence suggested that he had committed suicide. The battles for Berlin had lasted for 14 days and the capture of the city, synchronising with the vast surrenders to Field-Marshal Alexander and Montgomery (see ITALIAN FRONT; WESTERN FRONT), heralded the virtual end of the war in Europe.

But there still remained a number of pockets of resistance, including the Bohemian fortress. Gen. Eremenko, advancing along the E. approaches, took the strong bastion of Teschen on 3 May. As late as 6 May the Germans were still putting up stiff resistance in Moravia to the Russian forces of Gen. Eremenko and Marshal Malinovsky. The general advance towards the important tn and bastion of Olomouc, however, was in full swing. In the N., Rokossovsky took the is. of Rügen. Elsewhere on the E. F. the operations were marked by the Ger. Army's desperate attempts to disengage in their eagerness to surrender to the Brit. and Amer. forces. Allied divs. were fast approaching Prague. Gen. Patton approaching from the SW. near Pilsen and the Russians from the E., but over a hundred miles away. Patton's tanks entered Pilsen on 6 May. There was a citizens' revolt in Prague, and the Czech National Committee issued broadcast appeals for speedy allied help against some 300 tanks which the Germans were believed to have at their command. Breslau surrendered to Konev on 7 May. The city had sustained a siege of 82 days. Dresden fell on the following day, being the last tn of any major importance then still held by Ger. forces. On the same day Eremenko captured Olomouc on the Morava. But apart from fighting in a few isolated little pockets, notably in Czechoslovakia, where Patton's forces were marching to join up with the Russians, the end had come on the E. as on the W. Front. The end of Ger. resistance came on 9 May with the final act of surrender to the Allies. (See WESTERN FRONT IN SECOND WORLD WAR.) This was a repetition of Gen. Jodi's surrender at Rheims to Gen. Eisenhower on 7 May, but was now made to all the Allies, including Russia. This act of

surrender was signed in Berlin by Field-Marshal Kettel, Adm. Friedeburg, and Air Col. Gen. Stumpf, and it was an unconditional surrender of all Ger. armed forces on land, at sea, and in the air to the Supreme Commander, Allied Expeditionary Force, represented by Air Chief Marshal Tedder, Deputy Supreme Commander of that force, and simultaneously to the Supreme High Command of the Red Army, represented by Marshal Zhukov, Gen. Spaatz of the U.S. Air Forces and Gen. de Lattre de Tassigny of the Fr. First Army signed as witnesses.

Russian tanks under Gens. Izybalko and Lelushenko turned from Berlin in a swift rush southward on 3 May. They crossed the Dresden-Leipzig highway W. of the Elbe, and broke into Bohemia in an operation of great audacity, the tanks entering Prague from the NW. in less than 6 days from their start, a distance of 150 m. Konev arrived in the city on 11 May. Patton was prevented from entering Prague in order to allow the Russians the credit for liberation. But he could have entered 3 days before the Russians, and saved many Czech lives, apart from retaining Czechoslovakia within the W. sphere of influence.

In fighting on the scale of that which took place on the E. F., 1941-5, casualties on both sides were bound to be enormous. Accurate casualty figures have never been agreed, but the military dead alone on each side ran into sev. million. The campaign was remarkable for the immense destruction wreaked upon the civilian pop. Some authorities have estimated that between 7 and 10 million Russian civilians d. during the campaign, and the material destruction was also vast. The Ger. occupation of Russian ter. occasioned some of the worst atrocities of the war; but it is also true that Russian troops committed excesses when they occupied not merely Germany but even areas basically friendly to them. Ten years after the war ended the Russians were still holding sev. thousand Ger. prisoners, though repatriation of some 9000 Germans, allegedly held for war crimes, was begun after Adenauer's visit to Moscow in 1955.

The final and overwhelming Russian victory was fundamentally determined by numerical superiority in both men and equipment. To this must be added the strategical skill of Russian generals such as Zhukov, Konev, and Cherniakovsky, the enthusiasm and self-sacrifice of the masses, both behind the front line and behind the enemy lines, and the co-operation of Russia's allies, both in sending direct material help, and in diverting a vital part of Germany's military strength away from the E. F. by their own offensives in the W.

The destruction of the Ger. armies on the E. F. was total: the retreat of autumn 1944 had become a rout by 1945. But the earlier stages of the campaign had been marked by some brilliant Ger. strategical successes, and until the end of 1944 the Germans fought with determination and bravery. Sev. of their worst

defeats prior to 1945 were the result of the military command being overridden by orders from Hitler based on purely propaganda considerations.

After the war it was obvious that Russia had used her military occupation of E. Europe, undertaken initially to bring about the total Ger. defeat, to establish Communist or near-Communist regimes in the countries concerned. Britain had wished the W. forces to anticipate the Russian occupation of much of this ter.—but in this she was overruled by the United States.

See also GREECE, SECOND WORLD WAR CAMPAIGNS IN; NAVAL OPERATIONS IN SECOND WORLD WAR; POLISH CAMPAIGNS IN SECOND WORLD WAR; WESTERN FRONT IN SECOND WORLD WAR.

See I. Ehrenburg, *Russia at War*, 1943; W. E. D. Allen and P. Muratoff, *The Russian Campaigns of 1941-43*, 1944, and *The Russian Campaigns of 1944-5*, 1945; A. Tolstoy, *My Country*, 1944; T. Plievier, *Stalingrad* (a novel), Munich, 1947; C. Falls, *The Second World War*, 1948; 'Strategicus,' *A Short History of the Second World War*, 1950; C. Wilmot, *The Struggle for Europe*, 1952; J. Thorwald, *Flight in the Winter* (trans. by F. Wieck), 1953; F. W. von Mellenthin, *Panzer Battles, 1939-45*, 1955; J. F. C. Fuller, *The Decisive Battles of the Western World*, 1956; and *The Fatal Decisions* (ed. by W. Richardson and S. Freiden), 1956.

Eastern Orthodox Church, sometimes inaccurately called the Gk Church, as identified with the Gk-speaking half of the Rom. empire, embraces far more non-Greeks than Greeks, and worships not only in Greek but also in Slavonic and many other languages, the liturgy being often used in the vernacular. Among refugees of mixed origin, a combination of languages is even used at times. Historically the E. O. C. is the anct Church of the E. separated from the Lat. W. in 1054 (see CHURCH HISTORY; CERULARIUS; FILIOQUE). There had been schisms before (see PHOTIUS), but this was embittered and hardened by the Crusades (q.v.) and especially by the sack of Constantinople, 1204. Doctrinal agreement was for a while reached at the Council of Ferrara-Florence, 1438-41, but the resentment of the E. laity nullified it. Since then doctrinal and papal developments in the W. have widened the gap, as also the secession of the small group of Uniate (q.v.) Churches from Constantinople to Rome.

The constitution of the Eastern Orthodox Church, like that of the Anglican Communion (see ANGLICANISM), is a federation of self-governing (autocephalous) Churches, the principle being that each nation should have its own Church, with its own customs and complete freedom and equality within the Orthodox family, self-administering and using in worship the language of its choice. The Ecumenical Patriarch of Constantinople has a primacy of honour but no right to interfere with the autocephalous Churches except at their invitation. Each Church is divided into dioceses, and these into the

equivalent of deaneries and pars. The laity are prominent in the life and gov. of the Church. Teaching and preaching are permitted to laymen, and there have always been great lay theologians in the E. O. C. Parochial councils, diocesan conferences, and national synods are active in the Church, and have often been suppressed by despotic govts. as dangerously democratic, e.g. in Russia, 1681-1917. There are 9 great patriarchates, of which Constantinople, Alexandria, Antioch, and Jerusalem are the ant and original 4; to these have been added Moscow, Georgia, Serbia, Rumania, and Bulgaria. Apart from these there are the autocephalous Churches of Greece (under the Archbishop of Athens), Cyprus, Albania, Poland, and Czechoslovakia, with the autonomous monastery of Sinai. After the Russian revolution, refugees carried the E. O. C. to all parts of the world, and these branches are run by bishops and exarchs under the Patriarch of Moscow or Constantinople. Most pars. have married priests, or archpriests (rectors). A priest must marry before ordination, or remain celibate as a monk-priest (*hieromonach*). A priest whose wife dies may not marry again. Bishops are chosen from the celibate or widower priests.

The spiritual life of the Eastern Orthodox Church, while centred on the Liturgy, is intensely mystical. Monasteries are numerous (as are convents) and ruled by *hegumenoi* (priors) or archimandrites (abbots). The rule is always based on that of St Basil (see THEODORE OF THE STUDIUM). Many monks become hermits at a certain stage of spiritual progress. Bible-reading, meditation, and devotional reading (especially of St John Chrysostom, and of the *Philokalia*, an anthology of the E. Fathers on the mystical life) are common among the laity. Many live under the spiritual direction of a priest or layman known for his experience in prayer, and called in Russia a *Staretz*. Pilgrimage, especially to Palestine, is greatly prized, and pilgrims have an honoured status. Among methods of mental prayer, the Jesus prayer is most famous, viz. the inward repetition of the prayer, 'Lord Jesus Christ, Son of the living God, have mercy on me a sinner,' combined with rhythmic breathing, until it becomes a continuous activity as counselled by St Paul ('prayer without ceasing'). The *Kombolion*, a chaplet of beads or knots, from which the W. and the Moslem rosary (q.v.) are derived, is used by monks only. It is not subdivided into decades, a petition like the Jesus prayer, accompanied by deep reverences, being repeated continuously with it.

The doctrine, liturgy, and ceremonies of the Eastern Orthodox Church differ markedly from those of the W. The only creed recognised is the Nicene Creed, without the addition of the Filioque (q.v.). The decisions of the 7 great Ecumenical Councils (q.v.) are accepted, but only because of their subsequent approval by the Holy Spirit, shown in the unanimous consent of the Orthodox

Church. The E. O. C. entirely rejects the W.'s attempt to localise authority in the Bible or in this or that eccl. institution. For her the one authority is that of the Holy Spirit, working through the whole body of believers. The way of safety and sure truth is to preserve organic unity with the saints of the past, who lived, and still live, in the unity of the Spirit. The Apostolic Succession of the Hierarchy enables the faithful to attain this end. The invocation of saints and the veneration of their icons (q.v.) is an expression of the same idea. Statues, or carvings in the round, are not permitted in the E. (see ICONOCLASTS). Chief among the saints is the Blessed Virgin Mary (q.v.), the God-bearer, and spiritual mother of all the brethren of Christ. She is believed to have been without personal sin and, after dying naturally, not to have seen corruption, but to have been raised to heaven in her glorified body. The Orthodox do not believe, however, that she was exempt from original sin by an immaculate conception (q.v.). In the threefold ministry of bishops, priests and deacons, the latter is a permanent office of great liturgical importance. The name of Sacrament is not limited to the great 7. Baptism (q.v.) is administered, even to infants, by threefold total immersion, followed immediately by Confirmation (by a priest, with oil blessed by a bishop), and by Holy Communion. Holy Communion (see EUCHARIST) is always in 2 kinds, commingled in the chalice and given by a spoon to the laity. Infants and young children always communicate, being innocent, adults seldom more than 4 times a year, and in Lent instead of at Easter, when the length of the Liturgy and the crowded churches make it impracticable. The bread of the Eucharist is always leavened (see AZYMITES), specially baked in small loaves, imprinted with a particular design. Fasting before Communion is the rule, which the faithful however freely modify as their circumstances demand. The same is true of the Lenten fast, which strictly is of extreme rigour. The Holy Sacrament is reserved on the altar for the sick, but there is no genuflexion before it, nor any extra-liturgical cultus. Confession is not frequent, and made standing beside the priest, who gives a comprecatory absolution ('May God . . . through me, a sinner, pardon thee . . .'), except among the Russians, who in the 17th cent., under Lat. influence, introduced a declaratory form ('I . . . absolve thee'). A penance is not necessary and is seldom given, unless as a spiritual help. The penitent, before going to confession, usually visits relatives and friends to ask their pardon formally. Marriage, called the 'Crowning' as the couple are crowned in the rite, ideally may not be repeated even after the death of a spouse, much less after divorce. Nevertheless, the E. O. C. does bless second marriages in both cases, though with a penitential note in the form used. Unction is given not only in *extremis*, as in the Rom. Catholic Church, but for spiritual and bodily infirmities, even where the

sufferer is not bed-ridden or in danger of death. Holy orders are imparted by the laying on of hands by bishops, but great stress is laid also on the unanimous consent of the assembled congregation. At worship, except for the sick or old, the Orthodox stand, according to the ancient custom prescribed at Nicaea and preserved in the ancient Rom. basilicas. Individuals, however, kneel when their devotion leads them so to do. The Liturgy (q.v.) is always solemnly and chorally celebrated (without instrumental music) and is long (from 1 to 2 hrs.). One of 3 forms of rite is used, according to the day or season; the Liturgy of St Chrysostom generally throughout the year, that of St Basil on certain feasts, and that of the Presanctified in Lent. A 4th (of St James) is occasionally used. Prayers and requiems are offered for the dead, but the E. O. C. does not believe in a Purgatory of pain as the Rom. Catholic Church does. It believes that the departed share in some degree the glory of the saints, and reach a higher perfection by God's grace with the assistance of prayer on earth. Prayers are also offered for the increase of the saints in glory, and, like them, the departed may be asked for their prayers. The old Julian Kalendar is followed, and as this is now some 13 days behind the Gregorian, the Orthodox Christmas (q.v.) now almost coincides with the W.'s Epiphany. Easter (q.v.) is the principal feast. The Liturgy is celebrated at midnight, after which the kiss of peace is exchanged with the greeting 'Christ is risen,' and the reply 'He is risen indeed.' The Liturgy is never celebrated more than once a day on any one altar. The Orthodox Breviary contains the same series of Offices as that of the W. (see also CANONISATION).

Missions.—The E. O. C. has often been accused of lack of missionary zeal and enterprise. The truth is that after the 8th cent. Muslim domination prevented any such activity (even within Orthodox ter.), except for the Church of Russia, and she did immense work among the 20 million non-Christians of Siberia, Turkestan, and the Caucasus, and further in Japan, China, Korea, and Alaska. This, however, passed unnoticed in the W. Since the revolution, the Russian Church has borne the brunt of the struggle with atheistic Communism. For religion under the Soviet regime, see RUSSIA. Among emigrants and refugees the E. O. C. does a great pastoral work, but it has never been her practice to proselytise among other Christians, though (like the Rom. Catholic Church) she claims to be uniquely and exclusively the one true Church of Christ, and does not recognise other Christian bodies as belonging to it. Yet, in spite of this exclusive claim, she has responded to the approaches of other Christians anxious for Christian unity. Her relations with the Anglican Church have long been intimate and friendly, and she has shared fully in the Ecumenical Movement (q.v.).

While W. Christendom suffered some disintegration at the Reformation, this

made little impact on the E. O. C., in spite of the efforts of Melancthon and others (see LUCARIS), until the 19th cent. when the Baptists made many converts in Russia. However, the E. O. C. has suffered much from schisms in the past, the most important of the dissident oriental Churches being the Monophysite, Armenian, Coptic (Egyptian), Jacobite (Syrian), and Abyssinian (Ethiopian) Churches, and the Nestorian Churches (see MONOPHYTISM; ARMENIAN CHURCH; COPTS; JACOBITES; ABYSSINIAN (ETHIOPIAN) CHURCH; NESTORIAN CHURCHES; also UNIAE; MARONITE; MELCHITE). For the Old Believers, see RASKOLNIKI; see also HESYCHASTS; VESTMENTS, ORIENTAL ECCLESIASTICAL. See E. L. Langford-James, *Dictionary of the Eastern Orthodox Church* 1923; B. J. Kidd, *The Churches of Eastern Christendom*, 1927; M. Constantinides, *The Greek Orthodox Church*, 1931; S. Bulgakov, *The Orthodox Church*, 1935; F. Gavin, *Some Aspects of Greek Orthodox Thought*, 1936; R. M. French, *The Way of a Pilgrim*, 1941, *The Eastern Orthodox Church*, 1951; N. Zernov, *The Church of the Eastern Christians*, 1942; S. Bolshakov, *Foreign Missions of the Russian Orthodox Church*, 1943, *The Doctrine of the Unity of the Church in Khomiakov and Moehler*, 1946, and *Russian Nonconformity*, 1950; A. S. Khomiakov, *The Church is One*, trans. N. Zernov, 1948; *Proceedings of the Conference of Heads of the Autocephalous Orthodox Churches, Moscow, 1948*, trans. O. F. Clarke, Paris, 1951.

Eastern Question. The, an expression which derived its origin from the problems connected with the existence of a portion of the Ottoman Empire in Europe. The main aspects of the problem were the struggles of the Christian populations in Turkey to regain their lands and rights and the efforts of Russia to obtain free entry into the Mediterranean Sea through Turkish ter. Connected with the latter aspect was the attitude of other European Powers, who had no desire to see Russia gain a strategic advantage which might in the event of war be turned against the countries bordering the Mediterranean Sea. There was also a strong desire in Greece to regain Constantinople, which had been captured by the Turks in 1453. The question became one of first-class importance to European statesmen in 1807, but the Congress of Vienna failed to make Turkey comply with its terms; from which circumstance Russia gained considerable prestige in view of the fact that she had contended that the question was a purely local one, and this failure appeared to confirm that view. In 1850 France raised the question with Turkey regarding the right to protect Catholics in Turkey and the guardianship of the holy places in Palestine. France considered that she still had these rights, but the matter was contested by Russia, who made a similar claim. No agreement was reached, and the Crimean War (q.v.) resulted. The Serbs had for cents. endured much from the Turks, but in 1862 they drove them from Belgrade, a success which, however, only

served to intensify the difficulties among the Christians of Herzegovina. Bulgaria also revolted against Turkey in 1875, but this was quelled by wholesale massacre. In 1877 Russia, Serbia, and Rumania declared war on Turkey, the battles round Plevna being the most notable of this campaign. The allies swept on to Adrianople, and by Feb. 1878 were in sight of Constantinople, when the Brit. Gov., alarmed at their success and apprehensive of its consequences, sent a fleet to defend Constantinople. The war was brought to a close by the Treaty of Berlin, under which Turkey lost much ter. The E. Q. became acute again in 1895, when Turkey embarked on a career of massacre of the Armenians in spite of strong representations from Great Britain and France.

Just before the First World War the Balkan Wars (q.v.) of 1912-13 brought about certain territorial adjustments which irritated most countries concerned and were one of the contributory causes of the First World War. The E. Q. as such, however, lost its significance after Turkey had lost most of its European ter. Since 1920, however, a new E. Q. has in fact arisen: firstly, before and during the First World War, when Germany's campaigns in N. Africa and activities in Persia threatened Middle E. stability; and, secondly, since the Second World War, when the growth of Arab nationalism, exacerbated by the creation of Israel (q.v.), and encouraged by Soviet Russia, has made the Middle E. the most politically inflammable area in the world. See also TURKEY. See J. A. R. Marriott, *The Eastern Question*, 1917.

Eastern Rumelia, see RUMELIA.

Eastlake, Sir Charles Lock (1793-1865), painter, was for some time a pupil of Haydon, a fellow Devonian. He once saw Napoleon, a captive on the *Bellerophon*, in the harbour of his native Plymouth, and later executed a fine life-sized portrait of the emperor largely from sketches made on that occasion. From 1817 to 1830 he lived chiefly in Rome, and became R.A. in 1830. In 1850 he was president of the Royal Academy, and, having been appointed director of the National Gallery in 1855, he exerted his influence towards improving the It. schools. In his best work, such as 'Christ lamenting over Jerusalem,' 1843, 'Pilgrims arriving in sight of Rome,' 1828, and 'Byron's Dream,' 1834, it is grace and finish which impress. His *Materials for the History of Oil Painting*, 1847-69, still has value.

Eastland, city of Texas, U.S.A., co. seat of E. Co. Centre of oil-producing region. Pop. 3600.

Eastleigh, bor. and tn of Hants, England, 5 m. N. of Southampton and 7 m. S. of Winchester. The carriage and locomotive works of the S. Region of Brit. Railways are here, and cables and confectionery are manufactured. Southampton (E.) Airport is in the bor. Pop. 31,000 (1954).

Easton, John Murray (1889-), architect, b. Aberdeen. Started practice in London, 1919, in partnership with H. M. Robertson (q.v.). From 1929 to 1940

they were associated with E. S. Hall. Buildings by the firm include the Brit. Pavilion at the Paris Exhibition, 1925; the Royal Horticulture Society's new hall in London, 1926; exhibition pavilions at Johannesburg, Brussels, and New York, 1936-9; numerous important scientific, administrative, and collegiate buildings at Cambridge Univ., 1932 onwards; new buildings for Reading Univ., 1949; Hatfield Technical College, 1948; printing works for Bank of England, 1950; blocks of residential flats in Marylebone and St John's Wood; sev. large hospitals; Watling House, London, 1954; South Bank Development Scheme, 1953; univ. of Malaya, 1953. E. was awarded the R.I.B.A. Royal Gold Medal for Architecture, 1955.

Easton, cap. of Northampton Co., Pennsylvania, U.S.A., on Delaware R., above the rapids, at the confluence of Lehigh R., about 60 m. from Philadelphia. It is on various railways, and connected with New Jersey and South E. by bridges. The fine public buildings include Lafayette College (Presbyterian, 1826). There are important manufs., including steel, cement, slate, electrical devices, textiles, paper, leather, clothing, chemicals, and machinery. The bell rung to summon the people to hear the Declaration of Independence still hangs in the court house. Pop. 35,630.

Eastport, city and port of entry of Washington Co., Maine, U.S.A., on Moose Is. in Passamaquoddy Bay. It is on the U.S.A. E. frontier, and is the site of old Fort Sullivan. Fishing and lumber trade are the chief industries, and it has sardine canning estab. The first sardine cannery in the U.S.A. was built here in 1875. Pop. 3123.

Eastwood, par. and urb. dist. of Notts, England, about 8½ m. from Nottingham, with coal mines. E. is the bp. of D. H. Lawrence (q.v.), the novelist. Pop. 10,100 (1954).

Eaton, Arthur Wentworth Hamilton (1849-1937), Canadian writer, b. Kentville, Nova Scotia, son of a schoolmaster. He graduated from Harvard in 1880, entered the episcopal ministry, and was rector of St Andrew's Church, Chestnut Hill, Massachusetts, 1885-7. He was the author of: *The Heart of the Creeds and Historical Religion in the Light of Modern Thought*, 1888, *Acadian Legends and Lyrics*, 1889, *The Lotus of the Nile and other Poems*, 1907, *The History of King's County, Nova Scotia*, 1910, *The Famous Mather Byles*, 1914, *The Eaton Family of Nova Scotia*, 1929, and *Acadian Ballads and Lyrics in Many Moods*, 1930.

Eaton, Herbert F. see CHEYLESMORE.

Eaton, Margaret O'Neill (1796-1879), 'Peggy O'Neill'; daughter of Wm O'Neill who kept a tavern in Washington, D.C. About 1823 she married John B. Timberlake, purser in the navy, who committed suicide in 1828 in the Mediterranean. In Jan. 1829 she married John Henry E. —appointed secretary of war that year. It was reported that she had had relations with E. while Timberlake lived. Wives of cabinet ministers refused to

recognise her. President Jackson on this account reconstructed his cabinet, favouring Van Buren who was friendly towards Mrs E. She was popular in Madrid society when her husband was ambas. in Spain, 1836-40. Her husband dying in 1856, she next year married Antonio Buchignani, an Italian aged about 20, whom she soon divorced.

Eaton, Theophilus (c. 1590-1658), colonial governor, son of an Eng. clergyman. Educ. in Coventry, where he formed an enduring friendship with John Davenport, the Puritan divine, through whom, later, he was influenced to settle in New England. Prior to migrating he had a successful mercantile career under the East Land Company who made him their 'deputy governor' or representative in N. Europe. Following the religious persecutions in England, he accompanied Davenport to Holland and thence went to America and interested himself in settlement. He became governor of New Haven, and was active in procuring the charter for Massachusetts in 1629. His administration was, however, embittered by the disputes between Eng. and Dutch colonists.

Eaton, Long, see LONG EATON.

Eaton Socon, vil. of NE. Beds, England, on the R. Ouse, 2 m. SE. of St Neots, Hunts. It is noted for its 14th-cent. par. church of St Mary the Virgin, which was almost totally destroyed by fire in 1930, but restored to its original form by vil. craftsmen in 1932. Pop. 3032.

Eau Claire, city, co. seat of E. C. Co., Wisconsin, U.S.A., on Chippewa R. 75 m. E. of St Paul, Minnesota, in dairying and livestock area. It manufs. automobile parts, rubber and leather goods, and paper, and is the site of a state teachers' college and of a state fish hatchery. Pop. 36,100.

Eau de Cologne, celebrated perfume, probably invented by Johann Maria Farina (1685-1766), who came from N. Italy and settled in Cologne (1709). Sev. firms at Cologne bearing the name of Farina claim to possess the original recipe for its manuf. The main ingredients are pure distilled alcohol and various essential aromatic oils (neroli, orange, rosemary, citron, bergamot), so blended as to yield a refreshing odour. It relieves headaches, and is very occasionally taken as a stimulant.

Eau de Javelle, one of the earliest bleaching solutions obtained, so called because first made at Javelle, near Paris. It is a solution of hypochlorite of potash, and was used as an antiseptic and to remove stains from muslin, linen, and white marble.

Eaux-Bonnes, Fr. spa in the dept of Basses-Pyrénées, on the Valentin. It is a summer resort, and a centre for winter sports. Pop. 500.

Eaux-Chaudes, or **Aigues-Chaudes**, Fr. spa in the dept of Basses-Pyrénées, in the wooded gorge of the Ossau. Pop. 200.

Eavesdrip, or **Eavesdropping**, literally the dripping of water from the eaves of a building. The term is chiefly used in connection with the A.-S. custom preventing

anyone from erecting a house at the extremity of his estate, lest the eavesdrip should injure his neighbour's land. This custom corresponded to the *stillicidium* or urb. servitude of the Romans. The right to permit rain-water to fall from one's roof upon a neighbour's ground is in the nature of an easement (q.v.). In a derivative sense, eavesdropping means loitering about to overhear private matter with intent to repeat it.

Ebbfleet, hamlet on the Is. of Thanet, Kent, England, on the borders of Ramsgate. *Ebbs Fleet* is said to have been the landing-place of invading armies under Hengist and Horsa in AD 449, commemorated in 1949 by the voyage under sail and oar from Denmark of a modern replica of a Viking ship, the *Hugin*, now at Cliffsend off the Sandwich-Ramsgate road. St Augustine landed here in AD 597.

Ebbw Vale, urb. dist. in the co. of Monmouth, England, with steel and tinplate works, and collieries. Pop. 29,205.

Exchester, see CONSETT.

Ebeling, Christoph Daniel (1741-1817), Ger. man of letters, was prof. of hist. and German at the gymnasium of Hamburg and chief librarian in that city for over 20 years. He lavished his best years on a voluminous *Geography and History of the United States of North America*, 1796-1816, a work which earned for him the public thanks of Congress.

Ebenaceae, a family of tropical Dicotyledons, consisting of about 320 trees and shrubs. The inflorescence is solitary or cymose, and the flowers are usually dioecious. *Diospyros*, *Euclea*, *Maba*, and *Royena* are genera.

Ebenezer ('stone of help'), the monument which Samuel raised to God after the victory of the Israelites over the Philistines (see 1 Sam. vii. 12). The site is not exactly known, but is thought to be near modern Deir Aban.

Eberhard I im Bart ('the bearded') (1445-96), Duke of Württemberg, succeeded his elder brother Louis II, duke of W.-Urach, in 1457. In 1482, by the treaty of Münsingen, he brought about the reunion of Stuttgart and Urach, and granted to W. its first constitution in 1492. He was raised to the rank of duke by Maximilian I in 1495. He founded the univ. of Tübingen (1476), and was a patron of scholars.

Eberhard, Christian August Gottlob (1769-1845), Ger. writer, who is now only remembered by his *Hannchen und die Küchlein*, 1822, a long narrative poem, and *Der Erste Mensch und die Erde*, 1828, an epic poem on the Creation written in hexameters.

Eberhard, Johann Augustus (1739-1809), Ger. philosophical and theological writer, b. Halberstadt. His first work, *Neue Apologie des Sokrates*, 1772, advocated a broader theological outlook towards those who have not accepted the tenets of Christianity. His prin. works are: *Amyntor, eine Geschichte in Briefen*, 1782; *Versuch einer allgemeinen Deutschen Synonymik*, 1795-1802; and *Handbuch der Aesthetik*, 1803-5.

Ebers, Georg Moritz (1837-98), Ger. Egyptologist and novelist, b. Berlin. He became lecturer in Egyptian at Jena (1865), and prof. at Leipzig (1870). The famous medical Papyrus Ebers, which he acquired from Edwin Smith at Luxor, was pub. in 1874. He also wrote *Aegypten in Wort und Bild*, a descriptive work, 1878. In 1876 he resigned his professorship through ill-health, and began a series of instructive historical novels with the object of popularising Egyptian lore. The chief of these are: *Uarda*, 1877; *Der Kaiser*, 1881; *Serapis*, 1885; and *Kleopatra*, 1894. Many of his tales have been trans. into Eng. His *Gesammelte Werke* were pub. in 25 vols., 1893-5. See his *Die Geschichte meines Lebens*, 1893; and a study by R. Gosche, 1887.

Ebersbach, Ger. tn in the dist. of Dresden, 38 m. E. by S. of Dresden (q.v.). It is in the Spree valley, is a frontier station on the Czechoslovak border, and has textile and piano manufs. Pop. 12,000.

Eberswalde, Ger. tn in the dist. of Frankfurt an der Oder, on the Finow canal, 48 m. NW. of Frankfurt (q.v.). It has a 14th-cent. church, and has a forestry school, and iron, steel, and timber industries. In 1913 one of the largest finds of prehistoric gold objects (11th-6th cents. BC) in Germany was made here. Pop. 36,000.

Ebert, Friedrich (1871-1925), Ger. statesman; b. Heidenberg; son of a poor Catholic tailor. He was apprenticed to a saddler in his native city at the age of 14. He became a travelling journeyman saddler, and helped to found a saddlers' union. In 1894 he became editor of the Bremen *Bürgerzeitung*, a socialist paper which he gave up to become secretary of the Bremen branch of the party. Later he entered the Reichstag and by 1916 was the Socialist leader there. In 1918 he succeeded Prince Max of Baden as chancellor, and in Feb. 1919 was confirmed in his office as first president of the Ger. rep. He retained the presidency till his death, his tact, patriotism, and moderation gaining him support from his countrymen generally.

Ebert, John Arnold (1723-95), Ger. poet; b. Hamburg; a friend of Klopstock and Lessing. As a translator he was eminently successful, but in his own poetry his deficiency in original force is at once apparent. His compositions include drinking songs, lyrics, epistles, and some much-admired epigrams. He trans. Young's *Night Thoughts*, 1751, and pub. *Übersetzungen einiger poetischen und prosaischen Arbeiten der besten englischen Schriftsteller* (2 vols.), 1754-6.

Ebingen, Ger. tn in the Land of Baden-Württemberg (q.v.), 40 m. S. by W. of Stuttgart (q.v.). It has an anct church and tower, has textile manufs., and is a health and mt sports resort. Pop. 18,000.

Eblonites (Heb. *ebion*, poor man), name probably applied at first to all Christians, later used particularly of an ultra-Jewish party who, though Christians, remained outside the Catholic Church. Their gospel was a form of that known as the Gospel according to the Hebrews: they

strictly adhered to all the customs and ordinances of Mosaic law, thus regarding St Paul as an apostate whose epistles they rejected; and some of them did not believe in the miraculous birth of Jesus Christ. The chief authorities as to their early hist. are Irenaeus, Hippolytus, Origen, and Justin. Those who lived E. of the Jordan held Essene doctrines, which gave rise to the 'Clementine' literature.

Eblis, or **Iblis**, of Muslim demonology, a fallen angel (Azazil) who attained the characteristics of the devil, and became chief of the Jinn.

Eboli, or **Evoli**, It. tn in Campania (q.v.), 15 m. ESE. of Salerno (q.v.). It has an anct castle and fine churches; considerable damage was done during the Allied landings at Salerno in 1943. S. of the tn, near the R. Sele, are the ruins of the anct Eburi. Pop. 20,000.

Ebonite, see RUBBER.

Ebony (Gk *ebenos*), an extremely hard wood of various species of the genus *Diospyros* (family Ebenaceae). The best quality is deep black in colour, consists of heart wood only, is very durable, and is yielded by *D. ebenus*, a tree that flourishes in S. India and Ceylon. Various kinds of E. are procured from *D. tomentosa* in Bengal, *Brya ebenus* in the West Indies, *D. dendo* in Angola, and *Dalbergia melanocylon* in Senegal. See BAUHINIA.

Ebony Heart, tree of Queensland, Australia. The *Elocarpus bancroftii*, family Tiliaceae, gives a hard enduring wood, somewhat like lignum vitae and used for much the same purposes. Yields a fruit resembling a plum, which is used for food.

Ebora, see EVORA.

Eboracum, see YORK.

Ebridae, see HEBRIDES.

Ebro (Lat. *Hiberus* or *Iberus*, whence *Iberia*), Sp. riv., in the NE. of the peninsula. It rises in the S. of the prov. of Santander (q.v.) and flows SE. past Logroño and Zaragoza (qq.v.) to the Mediterranean SE. of Tortosa (q.v.). Its chief tribs. are the Ega, Aragón, Gallego, and Segre on the l. b., and the Jalón, Martín, Guadalupe, and Matarraña on the r. b. It is navigable for small vessels from Logroño, but navigation is difficult because of shallows and rapids. The delta has been canalised, and another canal exists between Zaragoza and Tudela (see IMPERIAL CANAL OF ARAGÓN).

Ebsambul, see ABU-SIMBEL.

Eburi, see EBOLI.

Ebusos, see IBIZA.

Eca de Queirós, Jose Maria, see QUEIRÓS.

Ecbatana, or **Agbatana** (Heb. *Achmetha*), cap. of anct Media, is first mentioned in Assyrian inscriptions of Tiglath-pileser I (c. 1100 BC). It was captured by Cyrus (549 BC), and became the seat of gov. and the favourite summer residence of Persian and Parthian kings. It was surrounded by 7 walls, within which lay the royal castle, built of cedar and cypress wood, covered with gold and silver. The city was plundered by Alexander the Great and Seleucus I. The modern Hamadan is built on its site.

Eccce Homo (Lat. 'Behold the Man'), the title given to pictures representing Christ crowned with thorns. One, by Correggio, hangs in the National Gallery, London, and one of the best known of such pictures is a Titian of 1543, belonging to the former Imperial Gallery at Vienna.

Eccentric, a special form of crank, consisting of a disk placed eccentrically on a revolving shaft. A rod connected to a point on the E. and, at the other end, to a crosshead (q.v.), or hinged to another rod running through a sleeve, transforms the rotation of the E. into a rectilinear to-and-fro motion.

Eccentricity, see GEOMETRY, *Higher Pure G.*

in retirement at Kingston-on-Thames, devoted to fishing. He wrote a dozen operatic pieces and masques and a vast amount of incidental music for plays; in 1710 he pub. nearly 100 songs, many of them taken from his theatre music. His younger brother Henry (c. 1670-1742) was a violinist and minor composer.

Eccles, municipal bor. of Lancs, England, and a suburb of Manchester. It was incorporated in 1892. There are engineering works, cotton mills, and manufs. of ginghams and fustian goods. E. cakes take their name from the neighbourhood, where they are largely made. Pop. 43,780 (1954).

Ecclesfield civil and eccles. par. and



THE EBRO AT LOGROÑO

Echymosis, a spotted discoloration of the surface of the skin, caused by an effusion of blood below. It occurs as a result of a blow of some kind, but sometimes it is met with in diseases of the blood and blood-vessels. A fresh E. has the appearance of a group of pin-pricks. See BRUISE.

Ecclefechan, vil. of Dumfriesshire, Scotland, 5 in. N. of Annan. Thomas Carlyle, who was born and buried here, introduces it into *Sartor Resartus* under the name 'Entepfuhl.' Pop. 610.

Eccles, Sir David McAdam (1904-), politician, educ. at Winchester and New College, Oxford. Since 1943 he has been Conservative M.P. for Chippenham. He was minister of production, 1942-3; and, in the post-war Conservative Govs., minister of works, 1951-4 (his term of office covering the coronation of Queen Elizabeth II); and minister of education, 1954-7. In 1957 he was appointed president of the board of trade. He was knighted in 1953.

Eccles, John (1668-1735), composer, grandson of the Quaker Solomon Eccles (or Eagles), from whom he learnt music. He became a theatre composer and in 1700 was appointed Master of the King's Band. The same year he gained the 2nd prize for a competitive setting of Congreve's *Judgment of Paris*. For the last quarter of a century or so of his life he lived

vil. of Yorks (W. Riding), England, forming part of Wortley (q.v.) rural dist. The par. church of E. is in the Perpendicular style, incorporating parts of 2 earlier buildings, and erected between 1377 and 1546. Sev. coal seams are found here, and there are iron and steel works. Pop. (civil par.) 30,000; (eccles. par.) 7500.

Ecclesia, the general assembly of all freemen of the state in Athens. After the reforms of Cleisthenes, it was known as the E. when it met for political purposes, and 'Heliaea' when it had judicial business in hand. It is not thought that the E. had any definite form before the time of Solon, though some such institution was doubtless in existence. The reforms of Solon are not known exactly, but there is no doubt as to their general effect, which was to give the Thetes, the lowest class, a voice in the E., and the power of criticising and exercising some check over the actions of the Eupatrids, the governing class. All citizens of Athens over 18 years of age were eligible to appear in the E., save those who had for any reason suffered loss of civil rights. The meetings were of 3 kinds, ordinary, extraordinary, and those convened by special messengers; the last were held only when the attendance of the country members was desired. The proceedings were opened by various religious formalities, and if the omens were unpropitious, or the weather was bad, no

meeting was held. The voting was as a rule by show of hands, or on special occasions, by ballot. The practice of payment for attendance was instituted some time in the 4th cent. BC. The E. was the sovereign power in Athens throughout the time of her greatness, though being an untrained body it could not initiate laws; this was done by a committee of the Boule (q.v.). In 308 BC Demetrius of Phalerum curtailed the power of the E. by instituting Guardians, who could prevent it from voting on an illegal motion. As a governing body the E. perished when Athens became a *civitas libera* of Rome. See Aristotle's *Athenian Constitution*.

Ecclesiastes (Heb. *Kohleth*, 'the Preacher'). The Gk title, from which the Eng. is derived, means 'a member of assembly'; the Heb. word is found only in this book, and seems to mean the 'herald' who summons an assembly. Luther's trans. *der Prediger* ('the Preacher'), followed in the Eng. version, is fairly satisfactory; the purpose of the book is hortatory, and the form of the word implies an assembly.

Contents.—It is generally accepted by critics that the work is composite, an original pessimistic and even agnostic writing glossed by a wise man in praise of Wisdom and by a pious Jew who gave unorthodox and devout corrective to the cynicism of the original. The irregularity of the writing and jerkiness of the treatment are manifest. But a unity can be discerned if it is read as the observations on life of a man passionately sure of God's moral gov. of the Universe, yet disillusioned completely as to the old Jewish theory that virtue is always rewarded and sin punished in this life. As yet the doctrine of the future life was unrevealed. E. is left therefore with an unresolved conflict between his faith in God and the vanity of human life and virtue, if limited to this world.

Language.—The Hebrew of E. is unlike that of any other portion of the O.T. No other book has so large a proportion of words, phrases, and senses of words peculiar to itself. In its vocabulary and many of its constructions it is related to the 'Mishna,' which reached its present form c. AD 230 but contains much older material: most of the linguistic peculiarities have analogues in classic Hebrew.

Date and Authorship.—The ascription to Solomon is a literary device to add weight to the author's message. Solomon was the typical wise man, and experienced the vanity of earthly prosperity to the full. But the conditions revealed in the book do not fit those of Solomon's day. The author is therefore unknown: the date, it is generally agreed, is post exilic, earlier than Ecclesiasticus (190 BC) which shows knowledge of it, but later than Job and Proverbs, since it abandons the belief in earthly rewards and retribution. C. 220 BC would fit it.

Canonicity.—The disciples of Hillel and Shammai disputed its inspiration, but it was accepted at Jamnia (see BIBLE). None of the Christian Fathers questioned it.

Commentaries.—McNeile, 1902; Williams, 1922; Odéberg, 1929; Beal, 1950.

Ecclesiastical Commissioners, see CHURCH COMMISSIONERS.

Ecclesiastical Courts, C. in which the canon law (q.v.) is administered and E. causes are determined. Shorn of their former wide civil and criminal jurisdiction over laity and clergy alike in such matters as divorce, wills, and blasphemy (q.v.), they are now concerned only with questions of doctrine and Church discipline. The prin. E. C. are: (1) The Bishops' Consistory Court, presided over by the bishop's chancellor (q.v.), which can try clergy for uncleanness and wickedness of life, but not for doctrinal offences. Some authorities believe it can still try laymen guilty of heresy or incest. Since the passing of the Incest Act, 1908, made the offence of incest a crime cognisable by the ordinary courts, it may be assumed that jurisdiction of the consistory court over laymen is obsolete, although theoretically it can punish laymen by refusing them the Sacrament and prohibiting them from entering a church for such offences as the above, and for brawling. In exercising quasi-criminal jurisdiction the chancellor is assisted by 5 assessors who act as judges of fact. (See also CLERGY DISCIPLINE ACT, 1892.) The bishop can veto the prosecution of a clergyman for uncleanness and wickedness of life; the civil jurisdiction of the court relates principally to the grant of faculties for alterations in churches, questions of repairs to church fabric, and to disputed rights to pews. (2) The Court of Arches, presided over by the Dean of Arches. This court hears E. appeals from the consistory courts of the bishops of the prov. of Canterbury, and has jurisdiction over the 13 peculiar parishes in the diocese of London. It also has the transferred jurisdiction of the old Provincial Court of the Archbishop of Canterbury. The court tries also doctrinal offences and practices under the Public Worship Regulation Act, 1874. (3) The Provincial Court of the prov. of York, which hears appeals from the consistory C. in the diocese. (4) The Court of the Archbishop, presided over by the archbishop or his vicar-general, which has jurisdiction to try bishops for E. offences. The Court of the Bishop sitting in person, the Provincial Court of the Archbishop of Canterbury, and the Court of the Archdeacon are obsolete. The judicial committee of the privy council is the supreme court of appeal in all E. matters. In 1954 a commission appointed by the archbishops recommended a simplified system of E. C. and the estab. of a Court of E. Causes Reserved to determine doctrinal and ceremonial questions.

Ecclesiastical Dilapidations, in Eng. law, comes under the heading of waste. In England the incumbent of a benefice is compelled to keep his residence and its outhouses in a proper state of repair, i.e. free from dilapidations. If he be rector he is further obliged to take charge of the fabric of the chancel, though not to supply the ornaments or painting thereof.

One who fails to fulfil these obligations is liable to an action for dilapidations by his successor. On entering a benefice, the new incumbent must carry out all necessary repairs under the instruction of the bishop, after complaint by the archdeacon, rural dean, or patron. Each diocese has a surveyor of dilapidations, who reports on the condition of church property. In Scotland the heritors have to repair all except 'free manses.'

Ecclesiastical Law, in England, is the L. of the Church of England administered by the secular courts (q.v.), the sources of which are derived mainly from canon L. and civil L. (q.v.). It has never acquired that importance in the general L. which it once enjoyed in those countries where the state was subordinated to the Holy See. E. L. has, however, influenced principles applied in probate, divorce, and matrimonial matters which are now dealt with by the High Court. See also ECCLESIASTICAL COURTS.

Ecclesiastical Titles Act, Act passed in 1851 to prohibit the assumption by any unauthorised person of a title from any place in the U.K., whether or not such place were the seat of an archbishopric, bishopric, or deanery, and declaring null and void all acts done by them, or gifts made to them, under such titles. The Act was the legislative expression of the hatred of Catholicism. The immediate cause of the A. was the Oxford Movement led by the Rev. J. H. (afterwards Cardinal) Newman, whose followers, the so-called Tractarians, endeavoured to prove that the doctrines of the Church of England were essentially similar to those prevalent in the primitive Catholic Church. The authorities took this revival of religious energy to be no more than a desire for reconciliation with Rome, and the prevalent excitement consequent on the secessions from the Estab. Church to the Church of Rome led to Lord John Russell securing the passing of the E. T. A., which, however, through the weakness of its provisions, remained nugatory. It was replaced in 1871 by another E. T. A. which mitigated the heavy penalties imposed by the earlier Act. In this connection we may note that the Statute Book still contains an Act passed in 1829 which prohibits the assumption by any persons, other than the person authorised by law, of the name, style, or title of an archbishop, bishop, or dean of the Church of England. This is the Roman Catholic Relief Act.

Ecclesiasticus, the 'church book,' an apocryphal or deutero-canonical work in the Bible. The Gk name is 'the wisdom of Jesus, Son of Sirach,' or, more briefly, 'wisdom of Sirach.' The original name is said to have been 'Proverbs' in Hebrew, though it was known to the Rabbis as 'Book of Ben Sira.' The original Hebrew, lost after the Jamnia Rabbis excluded the Book (see BIBLE), was discovered among the discarded MSS. in the Cairo Geniza in 1896. It has been proved that before 132 BC a second and slightly expanded version of the Heb. text was produced, which underlies those

of the Vulgate and A.V. Its prologue tells us the Gk trans. was made by the author's grandson, perhaps from an autograph copy.

Authorship.—The Prologue fixes the date approximately as c. 180 BC. Josephus mentions it; Lev. i. ff. refers familiarly to Simon the High Priest (219–196 BC) as known to the author but dead when he wrote.

Contents.—The Book of Ben Sira is similar to Psalms, Proverbs, and Ecclesiastes, and contains hymns, prayers, rules of conduct, and speculations on a variety of practical subjects. The prologue explains the author's purpose in writing. He has a thorough knowledge of the O.T. books, and quotes freely from them; and although he omits the names of Daniel, Ezra, and Esther from his list of Heb. heroes, some of his phrases seem to be taken from the Book of Daniel. He makes no reference to Chronicles.

Ecclesiology, the science and study of church archaeology, architecture, and decoration. It also comprises church hist., as revealed by these.

Eccremocarpus, a genus of Bignoniaceae, contains 3 species of handsome Peruvian plants. *E. scaber* is climbing and half-shrubby in habit; it grows in thickets and hedges of its native country, and will live in the open air in the milder parts of England.

Echegaray y Elizaguirre, José (1832–1916), Sp. scientist, politician, and dramatist, b. Madrid. In 1858 he became a prof. of mathematics and pub. sev. valuable scientific works. It was not till he was 40 that he turned his attention to the writing of dramas and comedies. His works, which were issued under the *nom de plume* of Jorge Hayaseca, satirise the vices of society, and were very popular. Among his works may be mentioned: *La Esposa del vengador*, 1874; *En el pilar y en la cruz*, 1878; *Muerte en los labros*, 1880; and especially *El gran Galeoto*, 1881. He was granted the Nobel prize in 1904. See H. de Curzon, *Le théâtre de J. Echegaray*, 1912; J. R. Young, *J. Echegaray*, 1938.

Echelon (Fr., rung of a ladder), military term used of a regiment, the formation of whose troops resembles a ladder; that is, the divs. march in parallel lines, not exactly behind each other, but each to the right or left of the preceding one.

Echeveria, a genus of Amer. succulent perennials, family Crassulaceae, about 150 species, with ornamental leaves, always in rosette formation, and bell-shaped flowers.

Echidna, or **Spiny Ant-eater**, name given to 2 species of mammals in the order Monotremata; these are *Echidna aculeata*, or common E., and *Proechidna bruijnii*, or 3-toed E. The former, which has 5 toes on each foot, all clawed, inhabits Australia, Tasmania, and New Guinea, while the latter is found only in NW. New Guinea. Both are fossorial and mainly nocturnal animals, frequenting rocky dists. and subsisting chiefly on ants. The upper surface of the head and body is covered with a mixture of stiff hairs and short thick spines. It has a long, slender, beaklike

snout, with the elongated, cylindrical tongue common to all ant-eaters. The *E.*, and the Duck-billed Platypus (*Ornithorhynchus*), which together constitute the Monotremata, are unique amongst mammals in their mode of reproduction, by laying eggs. The female is provided with a pouch in which she places the single egg and in which the young suckles after birth.

Echinocactus, family Cactaceae, a genus of 9 species, all N. Amer., of large, roundish, ribbed plants, with densely woolly crowns, very spiny areoles, and flowers, usually yellow, at the top of the plants. *E. grusonii*, *E. grandis*, *E. ingens*, and *E. palmeri* are Mexican.

Echinococcus, name given to certain Cestoda in the cystic or bladderworm stage. *E. polymorphus*, or *E. veterinorum*, is found in sheep, in domestic animals, and occasionally in man; in its mature or tapeworm stage it infests dogs. The bladder, which is known as a hydatid cyst, occurs in the liver, brain, and other places; it may reach the size of a football and calls for surgical intervention. See CESTODA; TAPEWORM; HYDATID DISEASE; and BLADDERWORM.

Echinococcus Disease, see HYDATID DISEASE.

Echinodermata (Gk *echinos*, hedgehog, and *derma*, skin), name given to the great branch of invertebrate animals which includes Holothuroidea, the sea-cucumbers; Echinoidea, the sea-urchins; and Asteroidea, the star-fishes, etc. They are exclusively marine, and feed chiefly on small animals; their main characteristic is the water-vascular system, which is connected with the tube feet, and provides the means of progression and respiration. Many of the *E.* have the power of casting off and regenerating different parts of their bodies. The Echinoidea are predominantly globular, but a few are discoid. The body is enclosed in a shell of polygonal plates, accurately arranged in double rows, and covered with knobs or spines, and small stalked outgrowths, pedicellariae, some provided with 2, others with 3, blades, between which they seize any foreign particles or small animals and remove them, so keeping the shell clean. There is a complicated masticating apparatus, formed by the 5 teeth and 15 other pieces, and known as Aristotle's lantern. The animals move generally with the mouth directed towards the ground. There are 2 orders: (1) Palaeoechoinoidea, comprised solely of extinct and fossil forms, the oldest members being found in the Upper Cambrian; (2) Euechinoidea, including all living and some extinct species. The Asteroidea is typified by *Asterias rubens*, the common 5-rayed starfish, whose native haunt is the floor of the ocean at some depth, but which is often seen in shore pools at low tide. Allied to this class are the Ophiuroidea, or brittle-stars, whose arms, however, branch out more abruptly from the central part. Like the Echinoidea, the Asteroidea have outgrowths of spines and pedicellariae. At the end of each arm there is a bright red spot, the 'eye,' which is sensitive to light. Starfishes feed on bivalves, flat-

tening the tube feet on the 2 halves of the shell and then widening the arms of the star so that a steady pull on the muscles is exerted. The water-vascular system communicates with the exterior by a short canal, the stone canal, and an opening, the madreporite, which in Echinoidea and Asteroidea is represented by a porous plate. The Holothurians differ at first sight from other *E.*, as they have a plump, cylindrical body and a soft, leathery skin, in which is embedded a series of calcareous plates. Holothurians are generally sedentary. They live on the sea floor, and can crawl by means of their tube feet. These are not developed in species which burrow in the mud. The Crinoidea, feather-stars or sea-lilies, grow together in great masses, and are mostly fixed to the sea-bottom, or rock surface, by a joined stalk; they are also very common as fossils. The



ECHINODERMATA

Left, Asteroid. Right, Holothurian.

feather-star swims by movements of its 'arms' and alights by means of small leg-like outgrowths on them. Most *E.* lay small eggs in the sea, and these develop into larvae of various types. *E.* in the colder seas retain the eggs in the body-cavity, or swallow them and keep them in the stomach until they develop. In a few cases, after their release, the young are protected by the mother, and lie in depressions or among the spines on her body. The Blastoida and Cystidea, extinct classes of *E.*, are found in the Lower and Upper Silurian, and some Cystidea in the Cambrian rocks.

Echinoidea, see SEA-URCHINS.

Echinolampas, generic name of certain species of echinoderms in the family Cassidulidae. They are heart-urchins, with the anus on the under-surface.

Echinophora, genus of umbelliferous plants, is to be found in the Mediterranean. *E. spinosa*, the sea-parsnip, is an inhab. of sandy sea-shores, and has pinnate spinose leaves.

Echinorhynchus, name given to a genus of parasitic worms belonging to the Nematoda, and grouped under a special class, Acanthocephala.

Echinus, see SEA-URCHINS.

Echites, family Apocynaceae. Genus of tropical Amer. twining shrubs; *E. stellaris* and *E. sulphurea*, with spectacular flowers, may be grown in green-houses.

Echium, see VIPER'S BUGLOSS.

Echmiadzin, famous Armenian monastery 10 m. W. of Yerevan, since 1441 the seat of the Armenian Patriarch ('Catholicos') and the religious centre of the Armenian Church. The main cathedral

was founded in 303 by St Gregor, the illuminator of the Armenians.

Echo: 1. Gk nymph who repelled Pan; he, in revenge, made shepherds tear her to pieces till only her voice remained. But Ovid says E. was a nymph whom Zeus employed to talk to Hera to distract her from discovering his amours. Hera, discovering this, made E. unable to say anything but the last words of somebody else's speech. E. then fell in love with Narcissus, and pined away in despair till only her voice remained.

2. Sound produced by the waves of sound reflected from something denser than air. Since the velocity of sound in air is about 1100 ft per sec., an observer situated at a distance of about 550 ft from a reflecting surface would hear the E. of his voice after 1 sec., and would hear as many words as would last for that space of time. Various natural peculiarities of configuration have made the E.s in different parts of the world famous.

The modern 'echo sounder' is a machine which records ultrasonic waves reflected from the sea-bed, and allows the depth of water to be determined, and also detects submarines.

Echternach, tn of the Grand Duchy of Luxembourg. It stands on the R. Sure, about 20 m. NE. of the city of Luxembourg. The inhab. are chiefly engaged in manuf. of damask, linen, and porcelain. It is famous for the ann. procession on Whit-Tuesday, in gratitude for the ending of the penitential dance mania which raged in this neighbourhood in the 8th cent. There is a famous abbey here, founded by the A.-S. Willibrord, bishop of Utrecht, and a 13th-cent. par. church. E. was the S. point of von Rundstedt's desperate counter-offensive in the Ardennes (Dec. 1944-Jan. 1945), the N. point being near Malmédy. By the time the Ger. drive was halted the enemy had breached a 45-m. gap in the Amer. lines from E. to Monschau. (See also WESTERN FRONT IN SECOND WORLD WAR.) Pop. 3500.

Echuca, tn of Victoria, Australia, situated on the Campaspe and Murray rivs., 156 m. N. of Melbourne. A bridge 1905 ft long connects E. with Moama on the New South Wales side of the Murray. It trades in wool, wine, red-gum, timber, etc. Pop. 4000.

Ecija (anc't Astigi; Moorish Estija), Sp. tn in the prov. of Sevilla, the centre of the fertile valley of the Genil, a trib. of the Guadalquivir (q.v.). It has sev. fine churches and mansions, and has Rom. and Moorish remains. Its great summer heat has earned it the name of 'the frying-pan of Andalucía.' It has long been famous for its shoes, and also manufs. textiles. The dist. produces corn, fruit, wine, and olive-oil. Pop. 38,000.

Eck, or **Egg**, **Johann Maier von** (1486-1543), Ger. scholar and theologian, b. at Egg, in Swabia. He excelled in controversy, attacking Luther's thesis on indulgences, and defending the Catholic doctrines in the celebrated congress of Leipzig in 1519. Thenceforward he was one of the bitterest opponents of the Reformation; in 1525 his exposition of

Catholic dogma appeared in answer to *Lieux théologiques* of Melancthon, and was very successful. He took a prominent part in the congresses at Baden and Augsburg, and in 1530 sent a refutation of the Protestant confession to Charles V. In 1537 he pub. a Ger. N.T., and took part in the meetings at Worms in 1540, and at Ratisbon in 1541.

Eckart, or **Eckehart**, **Johannes**, see **ECKHART**.

Eckermann, **Johann Peter** (1792-1854), Ger. writer, b. Winsen an der Luhe. He became the friend and unpaid assistant of Goethe, and is principally known for his *Gespräche mit Goethe*, 1837, compiled from the notes Goethe had allowed him to take. The *Conversations* were trans. into Eng. by Margaret Fuller in 1889.

Eckernförde, Ger. tn in the *Land* of Schleswig-Holstein (q.v.), 16 m. NW. of Kiel (q.v.). It lies on a fford on the Baltic coast. It was for long a naval port, but is now a fishing port and holiday resort. Pop. 21,000.

Eckersberg, **Carl Kristoffer Vilhelm** (1783-1853), Dan. historical, marine, and portrait painter, b. Varnäs, Sleswig. He became a pupil of Abildgaard and afterwards of David, and also Thorwaldsen. It has been stated by his native admirers and critics that he first 'created a Danish colour.' His landscape scenes are clear and definite and the outlines natural, while his figures are conventional.

Eckhart, **Eckart**, or **Eckehart**, **Johannes**, very generally styled **Meister** (1260-1327), Ger. mystic, and one of the first speculative thinkers, b. Hochheim bei Gotha. Very little is known concerning his life. He entered the Dominican order, and studied and taught in Paris. After being made prior at Erfurt, he was vicar of his order in Thuringia. He was made vicar-general of Bohemia in 1307, and a few years later he preached at Frankfurt, Cologne, and Strasburg. His reputation for learning was very high, and he assisted in a controversy between Pope Boniface VIII and Philip of France. In 1327 his enemies caused him to be summoned before the archbishop at Cologne on a charge of heresy, when he partly recanted. Two years later he was again accused, and extracts from his works condemned, but he d. before the Bull against him was pub. His sermons and tractates written in German and Lat. are all that remains of his works, of which there is as yet no satisfactory ed.

Eckhel, **Joseph Hilary** (1737-98), an Austrian numismatist, b. Euzersfeld, Lower Austria, who in 1773 was made prof. of antiquities and numismatics at Vienna Univ. His chief work is *Doctrina Nummorum Veterum*, 1792-8. He is justly regarded as the founder of modern numismatics.

Eckington, par. and tn of Derbyshire, England, 7 m. SE. of Sheffield. There are saw-mills, iron works, canning factories, and manufs. of agric. implements. Pop. 17,000.

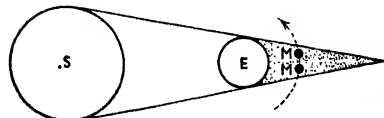
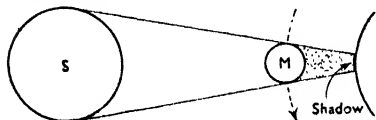
Eckmühl, Ger. vil. in Bavaria (q.v.), on the Laber, 15 m. S. of Regensburg (q.v.). It was the scene of the defeat of the

Archduke Charles of Austria (see CHARLES LOUIS) by Napoleon I (q.v.) in 1809.

Eclampsia, see PREGNANCY.

Eclecicism (Gk *eklegein*, to select), in philosophy, is the principle of selecting and adopting views from various systems and uniting them into one composite system of thought. Among the earliest eclectics must be numbered Cicero, the Peripatetics, and the Neoplatonists. E. has won great popularity in France, owing to the teaching of Victor Cousin, Adolphe Garnier, and others. Cousin asserted that 'Each system is not false, but incomplete, and in reuniting all incomplete systems we should have a complete philosophy, adequate to the totality of consciousness.' See Adolphe Franck, *Moralistes et Philosophes*, 1872; P. F. Dubois, *Cousin*, Jouffroy, Damiron, 1902.

Eclipses of the Sun and Moon. During the revolution of the earth round the S. and of the M. round the earth (see EARTH; MOON) there are certain positions of these bodies in which the M. comes between the earth and the S. and also when the earth comes between the M. and the S. In the first case an E. of the S. may take place and in the second case an E. of the M. may occur. The diagrams show the reasons for these phenomena. The first one shows the M. *M* in a line with the S. *S*, and the earth which is on the extreme right, only a small portion of its surface appearing. A cone of darkness to the right of *M* which intercepts the S.'s light is seen intersected by a small portion of the earth's surface; on any part of this the S. will appear totally eclipsed. Outside it some of the light from the top or bottom of the S. will not be intercepted by *M* and in these regions the S. will appear only partly eclipsed. If tangents are drawn from the top of *S* to the bottom of *M* and from the bottom of *S* to the top of *M*, they will intersect the earth's surface at points outside which the S. is completely visible, but inside which a portion will be hidden from view. Hence the distinction between a *total* and a *partial* E. of the S.



The lower diagram shows the earth interposing between the S. and the M., the result of which is a shadow cast on the M. As the M. does not

shine by its own light like the S. and other stars, it would not be visible were it not for the fact that some of the light refracted by the earth's atmosphere falls on the M.'s surface and is reflected back to the earth. Red predominates in this light, most of the shorter waves being absorbed as the light passes through the earth's atmosphere.

E. of the M. have not the same value as those of the S., and astronomers will go to any part of the earth where total E. of the S. are visible, setting up their instruments and making arrangements months beforehand, on some convenient site as close as possible to the centre of the belt of totality. This varies in width from a few m. up to 130 m., and the E. shadow sweeps over the narrow belt from W. to E. at a speed of about 35 m. a min. The belt from which a partial E. can be seen is much wider than this, but, compared with a total E., a partial E. has very little scientific value. The next total E. that can be seen in the Brit. Isles is on 11 Aug. 1999, and will be visible in Cornwall; in other parts it will be seen only as a partial E. The computations regarding the circumstances of E. are carried out at certain observatories by professional computers, though some amateur astronomers who are also mathematicians can make the computations. Certain abstruse problems arise, as, for instance, the speed of the M.'s shadow, which, we have seen, is about 35 m. a min., but this does not take into consideration the rotational speed of the earth, which varies according to the lat. and is more than 17 m. a min. in equatorial regions; hence if the shadow were moving W. at the equator its speed with reference to the earth's surface would be $35 - 17 = 18$ m. a min. The actual form of the shadow on the earth's surface, though as an approximation it can be regarded as an ellipse, is nevertheless not really an ellipse, and its projection on the nearly spherical surface of the earth does not conform to any well-known figure.

Those who wish to study the mathematical problems associated with E.s are recommended to read *The Mathematical Theory of Eclipses*, 1904, by Roberdeau Buchanan. Details of 8000 solar E.s between AD 1207 and 2161, and 5200 lunar E.s between AD 1206 and 2163, are given in Oppolzer's *Canon der Finsternisse*.

Ecliptic, The path which the sun takes in its apparent yearly journey from W. to E. among the fixed stars. This path lies through the middle of the constellations known as the Signs of the Zodiac (q.v.). Of course the E. is only the apparent path of the sun, for the earth revolves around the sun. If it were possible to view the earth from the sun, it would be found that the earth's orbit lay along the E. The E. is inclined to the equator at an angle of $23^{\circ} 27'$, and intersects it at 2 points 180° apart, called the equinoxes. The sun is at these points, known as the vernal and autumnal equinoxes, about 21 Mar. and 23 Sept.

Eclogite, or **Eklogite**, rock formation, crystalline in character, and composed of a green pyroxene, smaragdite, and red garnet. Occasionally feldspar, quartz, iron ores, etc., form a part of this exceedingly beautiful rock. It is not found in any great abundance, but it is seen among the Alpine mts., the Fichtelgebirge, at Baden, etc. The garnets in E. are frequently surrounded by a covering of bright green hornblende.

Eclogue (Gk *eklegein*, to select), a short poem, especially a pastoral dialogue. The term was first applied to the bucolics of Virgil and the idylls of Theocritus and hence came to be confined to poems of the same type. Spenser in his *Shepherd's Calendar* gives a false derivation of the word from *aix*, a goat, and *logos*, speech, the term E. being regarded as complementary to Pastoral, the former referring to form and the latter to content. In the 18th cent., when the E. was popular, its range was extended beyond country life, and to E.s were produced. John Davidson's *Fleet Street Eclogues*, 1893, were a similar departure. See PASTORAL POETRY.

Ecology (Gk *oikos*, house or abode, *logos*, discourse) is the study of the organism as a whole in relation to its environment. Since land plants are stationary, the study of plant E. is much easier, and consequently much more advanced, than that of animal E. On the other hand, plants and animals are so closely interdependent that investigation of the E. of one group involves that of the other. There are 2 main subdivisions of E. (1) Autecology, concerned with the separate environment factors and their effect on individuals. (2) Synecology, dealing with the combined effects of these factors on plant and animal communities. The chief environmental factors governing the distribution of plants and animals are temp., humidity, climate, soil, the intensity of light, the nature of the food, and interaction with other plants and animals. The individual effect of each separate factor is studied in the laboratory; the combined effects are seen out of doors, in woods, fields, swamps, lakes, seas, and other habitats. Generally speaking, animal communities are determined by plant communities—that is, by plants growing together and forming groups with a certain individuality. Any particular type of community is described as an association, and the general appearance of a plant association is determined by dominant species, e.g. the pine tree is the dominant species of a pine-wood association; in a mixed wood, oak and beech may be co-dominants. Associations having only one dominant species are called consociations. Plant associations show stratification; in a wood, trees constitute the uppermost strata, bushy undergrowth the next, herbs the 3rd, and mosses and liverworts the 4th. Beneath these are soil algae, fungi, and various bacteria, and protozoa, which by effecting changes in the soil affect the plants growing in it. Further change is effected by the constant addition of humus to the soil, and as a result of such changes

the character of the plant community gradually alters, other organisms better adapted to the changed soil gradually replacing the earlier ones. This process is termed ecological succession, and is concomitant with an ecological succession of animals. By studying the changing conditions as the level of Lake Michigan falls, Shelford has been able to predict, with regard to beetles of the genus *Cicindella*, the succession that will be determined by further fall in level. Since within limits animals can choose their habitat, behaviour is an additional factor of animal E. Animals form strata in a different manner from plants. The bottom stratum may be regarded as composed of animals forming food for those of the next stratum, and so on, until at the top are animals which have no enemies or are able to defeat them by virtue of size or skill. Thus spiders eat flies; small birds eat spiders; larger birds eat smaller birds. In this way animals form food chains, those forming the 1st link being far more numerous than those of the last. The 1st link consists obviously of herbivores capable of reproducing in enormous numbers, while the animals of the last link have limited means of reproduction and reduce competition between themselves by sharing out food areas. Other important factors in animal E. are the size of food and the status of the animal in the community, and interesting problems are presented by the phenomena of symbiosis and the specialisations of parasites. The extensive field of E. provides interesting material for the amateur who makes careful observations and keeps accurate records, but with drastic changes produced in natural communities by modern agric. practices, professional ecologists play an essential role in this industry. Their opinions are also sought when crops are to be introduced into newly claimed land. See also APPLIED BIOLOGY; SOIL SCIENCE. See A. Tansley, *The British Isles and their Vegetation*, 1939; W. C. Allee and others, *Principles of Animal Ecology*, 1949; C. Elton, *The Ecology of Animals*, 1950; also articles in *The Journal of Ecology* and *The Journal of Animal Ecology*.

Economic Blockade, see BLOCKADE; DECLARATION OF LONDON; ECONOMIC WARFARE, MINISTRY OF.

Economic Thought, History of. The H. of E. T. begins with the ancients, who confided everything to the power of the State, which resulted in the subordination of the individual to the State, and consequently in the subordination of economics to ethics and politics. The Gk philosophers condemned interest-taking and were prejudiced against trade and commerce. The Romans followed the Gks' ideas, and also made important studies of particular economic problems, but failed to establish a dominant system of E. T. Christianity strengthened in general the prevalent Aristotelian system of economic philosophy, its condemnation of usury and the pursuit of wealth in trade, its assertion of the superiority of agriculture, and its support of status. Christianity thus strengthened the subjection

of economics to ethics, but weakened the subjection of economics to politics. The early fathers, in their condemnation of avarice and their exaltation of fraternal love, sometimes used expressions which, taken by themselves, imply an utter condemnation of private property and an advocacy of Communism among the faithful; but this was only an ideal, and private property was early recognised as a necessity resulting from the fall of man. The effect of this ideal, however, appears in the accepted doctrine that the maintenance of the poor was not a matter of philanthropy, but an obligation. The scriptural attitude towards wealth led to an emphatic statement of the moral superiority of agriculture and handiwork over trade and commerce as a means of earning a livelihood, and the early writers seemed almost unanimous in the belief that what the seller made by trade the buyer necessarily lost.

With the increasing temporal power of the Church and the great development of commerce which marked the 11th cent. came the necessity of harmonising the doctrines of the Church with the obvious requirements of commerce, and many concessions were made by the later canonists. Thomas Aquinas (1226-74) concedes that it is lawful to trade for a simple livelihood, or in order to supply a country with the necessary articles which it does not produce, or when the profits of the trade are devoted to some honourable purpose, such as the assistance of the poor; but that, save in exceptional circumstances, a seller is bound to reveal a fault in an article, and that it is not permissible to sell an article for more than its worth. The fundamental axiom, in accordance with which all these conclusions are reached, is that every commodity has a fixed and objective value, which can readily be ascertained, and which determines its just price. The distinctively ethical standpoint of the canonists is shown in the prohibition of usury, which was based upon scriptural injunctions against it and upon Aristotle's argument that money being barren it would be extortion to charge for its use. As the growing commerce of the Middle Ages made the need of borrowing capital more and more imperative, the canonical theory had to be stretched so as to accommodate many ingenious forms of contract for what was practically, though not nominally, usury. In the latter half of the 15th cent. the Franciscans themselves instituted the *Monts-de-piété*, or charitable banks, for lending money to the poor at a small rate of interest to defray expenses of management.

Ethical considerations dominated medieval economic theory; political necessities that of the early modern period. The new national govts. had to secure greater revenue and in a liquid form. Ready money was necessary for the upkeep of armies and navies; and to meet the other requirements of a national power. It was imperative to find or create some better sources of revenue than the backward agriculture of the time. These necessities

led to the development of a mercantile system whose restrictive regulations, discriminating laws, and State interference Adam Smith and his immediate successors described and criticised. (See CLASSICAL ECONOMISTS.)

Mercantilism was the most important phenomenon of E. T. in the 16th and 17th cents., but it constituted no more than a part of a widespread and eager investigation of concrete economic facts. These studies became materials for Adam Smith's work. Money, banking, the rise of prices, pop., poor relief, etc., were extensively discussed in brochures and monographs. The maintenance of the poor was a constant subject of pamphlet and tract; Sir Thomas More, in his communistic *Utopia*, gives striking evidence that the problem of poverty occupied the attention of the best thinkers of the time. True, economic study had been separated from ethics and theology, but men like Bodin, Grotius, Pufendorf, Hobbes, and Locke developed economics into an essential part of a general political philosophy.

After mercantilism with its undue preference for commerce and industry and for a favourable balance of foreign trade there was bound to be a reaction in favour of agriculture. Mercantilism was the economic expression of nationalism: agriculture was now to find favour with the broad principles of natural law and liberty expounded in the works of Grotius, Pufendorf and Locke.

The preference for agriculture and industrial liberty found expression in the doctrines of the so-called physiocrats, the originator of which may be considered to be François Quesnay (1694-1774). The fundamental creed of the physiocrats was the subjection of economic and political phenomena to 'natural law,' which, as interpreted by them, gave rise to the familiar political doctrine of radical individualism, and a certain materialistic conception of wealth which somehow explains their peculiar economic theories. Adam Smith found that the physiocrats treated not only of political economy, 'but of every other branch of the system of civil government,' and that their political and economic theories were indissolubly fused in their general doctrine of a beneficent law of industrial freedom, according to which the largest production and most just distribution of wealth would be best secured by permitting each individual to 'pursue his own interest in his own way,' so long as he did not infringe on the liberty of others. This theory has been perpetuated and popularised by Adam Smith, and has influenced subsequent thinkers more than any other economic doctrine ever formulated. The physiocrats exposed the mercantilist error of confusing wealth with the precious metals, but they themselves fell into the error of confusing wealth with material objects, by identifying the production of wealth with the production of raw materials, whereby they concluded that manufs. and commerce, which merely change the position or form of raw materials, are

barren and unproductive, though useful and desirable when strictly subordinated to agriculture; that the value added to raw materials in the process of trade and industry is equivalent merely to the cost of production, while agriculture yields a net surplus over and above the cost of production. Quesnay considers the large agric. employer to be the real producer of wealth, not the agric. labourer. Agriculture being thus the sole source of national revenue, simplicity, economy, and justice demand that the state revenue be obtained by a single direct tax levied upon rent. Accordingly the physiocrats were the first who stated the epoch-making theory of surplus value, and the theory also that the product of industry contains a certain value, due to the co-operation of natural factors, which is in excess of the minimum remuneration required to elicit the toil and sacrifice of industry, and which constitutes, on this account, a satisfactory source of taxation.

Adam Smith (1723-90), whose *Wealth of Nations* appeared in 1776, is considered the greatest of economists and the father of economics. His influence hastened free trade, and popularised and dignified the systematic study of wealth; but his most important service was in divorcing political economy from ethics, and partly from politics. Such appears clearly in the delineation of his lectures, divided into 4 parts: I. Natural Theology; II. Ethics (included in his *Theory of Moral Sentiments*, 1759); III. Justice and Jurisprudence; IV. Political Economy. He has been accused of treating man as merely a wealth-producing animal, in whom altruistic motives are wholly absent; but in his *Theory of Moral Sentiments* the motives of duty and sympathy are fully recognised, and the desire for wealth is treated as only one of the worthier objects of ambition. Further, in *The Wealth of Nations* he opposes piece-work as calculated to excite the labourer to over-exertion, and voices the necessity for rest, diversion, and even 'dissipation.' His whole attitude is essentially this: 'Assuming that the object of the study is to increase the national wealth, this object will be most effectively secured by perfect industrial liberty.' On the other hand he did not succeed in separating politics from economics, because his ultimate purpose was to prove the supreme efficacy of the doctrine of *laissez-faire*. Before being able to lay down maxims for the increase of wealth, he had to inquire how wealth was actually produced and distributed. It was his dispassionate analysis of production, value, and distribution which had the greatest effect upon the economists who followed him, and led to the attempt to formulate a non-partisan science of political economy, which should pass no ethical or political judgments.

Malthus and Ricardo stand out among early followers of Smith and, with Bentham and other writers of the early part of the 19th cent., including McCulloch and James Mill, have been variously designated as the Classical, Orthodox, Ricardian, or Eng. school. Their general

system of thought is harmonious, but they differ upon points of economic doctrine. They are deductive in method, utilitarian and materialistic in assumptions, and cosmopolitan in the sense that their ultimate scientific ideal is the discovery of universal economic laws applicable at all times and to all nations. In France, J. B. Say may be placed in this group. He taught that supply creates its own demand (*Loi des Débouchés*) and his *Traité d'Economie Politique*, 1803, was a major means of spreading the Smithian views. The ethical framework of classical economy is due to Jeremy Bentham (1748-1832) through his formulation and continuous propagation of utilitarian philosophy. Bentham put it that 'To obtain the greatest portion of happiness for himself is the object of every rational being.'

Malthus's famous *Essay on the Principle of Population*, 1798, in which he propounded the theory that pop. tends to increase faster than food, exerted much influence in its day; but the gloomy inferences were falsified by the great advances in technology and science during the 19th cent., which multiplied production much faster than Malthus had expected, and by the use of birth control, which limited the growth in pop.

David Ricardo (1772-1823), in his theory of distribution, made the most important use of the Malthusian proposition. He held that as a country grew and pop. increased, society would be forced to resort to poorer and poorer soils to obtain its supply of food, the law of diminishing returns would operate, and as the margin of cultivation was forced down an increasing share of the product of industry would go to the landlord in the shape of economic rent—the difference between the natural productivity of the better land and the worst land in cultivation. Excluding rent, the div. of the remainder of the product between the labourer and the capitalist was determined by a corollary of the Malthusian principle—the 'iron law of wages.' This theory of distribution is fully developed as an integral part of his famous cost-of-production theory of value. When Ricardo said at times that all the expenses of production could be resolved into the toil and sacrifice of labour, he supplied the Communists with their celebrated labour theory of value, according to which labour is the sole cause of value, and consequently is entitled to the whole produce of industry, and Henry George (1839-97) with his doctrine that progress means poverty as long as private ownership of land is legal.

The most influential of Eng. economists between Ricardo and the younger, and greater, Mill was N. W. Senior (1790-1864). He propounded the abstinence theory of interest; and formulated the famous doctrine of the wages fund 'that the average rate of wages is the quotient secured by dividing the number of workmen into the fund of capital set aside by the capitalists for the employment of labour.'

John Stuart Mill (1806-73) was a thorough reformer, and typifies the transition in England from the classical to the modern school of E. T. He was first entirely under the influence of Ricardo, but in later years he followed Auguste Comte and the socialistic tendencies of his time. Fettered by the Ricardian economics, but moved by the warm desire conceived in his maturer years to find some means to improve the condition of the masses, his mind struggled hard to find a compromise between the 2 systems. The outcome of this mental battle appeared in 1848 under the title *Principles of Political Economy, with Some of their Applications to Social Philosophy*. This book was brilliantly written and became widely popular. It exercised an enormous influence upon the subsequent development of Eng. E. T. He preserved the old doctrine of rent and profits, and advocated *laissez-faire* as a general principle of political expediency, but made so many exceptions that at times they seem more important than the rule.

After 1850 Eng. E. T. was deeply affected by a reaction against the classical system. The logical successors of Ricardo and Senior were Cairnes, Bagehot, Fawcett, and, perhaps, Alfred Marshall. All of them have been defenders of the orthodox school, though they have recognised and expounded its limitations as a theoretical science. Thorold Rogers, Cliffe Leslie, Arnold Toynbee, Ashley, and Cunningham were historical economists who more or less endorsed the general views of the historical school (see below). A psychological school of political economy was founded by Jevons. He, Edgeworth, and others made important contributions in every branch of the science, particularly in statistics. Eng. economists now use all schools or methods, deductive, historical, psychological, statistical, and mathematical.

Karl Marx gave Communism a positive theory deriving from Ricardo's theory of value and distribution. The claim is that, as labour is the sole cause of value, the labourer is entitled to the whole produce of industry. Capitalism, it is asserted, is a temporary stage in industrial evolution, and must inevitably give way to collective production. Marx's theory of value has met with little favour; his doctrine, that the underlying causes of social currents, such as religion, literature, and art, are economic in character (the 'materialistic conception of history'), has influenced political scientists rather than economists.

Auguste Comte (1798-1857) is the father of modern sociology. His influence was immense. He was the first to protest against the Ricardians' aim at an abstract science of rigid precision and universal in application. Comte was the precursor of the Ger. historical school, which undertook the most influential reaction against classical economy. The historical school taught that economics is a social or political science which can be profitably pursued only in connection with the other sciences of political or social life, particu-

larly administration, law, and hist. Thus they replaced a universal political economy by an historical national economy. The nationalistic spirit of the school was first expressed in Friedrich List's economic pubs., 1789-1846.

The theory of marginal utility was most thoroughly developed and most widely applied by a group of Austrian economists, of which Menger, Wieser, and Boehm-Bawerk were the leaders. The theory itself was propounded almost simultaneously in 1871 by Jevons in England, Menger in Austria, and Walras in France. The disciples of this school held that the utility, or power of satisfying want, possessed by a commodity decreases per unit as the amount consumed increases, and the value itself expresses the utility of the last or marginal increment. The former unit of real value—i.e. the pain and sacrifice of labour—has made way for a unit of utility; the cost-of-production theory of exchange has been replaced by a wider conception which holds that value determines the expenses of production, rather than the expenses of production the value, that capital receives its value from the finished product, and not *vice versa*. The tendency of this theory has been to shift the centre of gravity in economics from the capitalist to the consumer. The theory of marginal utility still generally holds the field in the middle of the 20th cent.

Since the 1920's there has been a counter-reaction against the historical school and in favour of the main tenets of classical economics. The main leaders of the resuscitation of liberal economics have been Ludwig von Mises of Austria, Wilhelm Röpke of Germany, F. A. Hayek, first of Austria and then of England and America, Lionel Robbins and Sir Arnold Plant of England, W. H. Hutt of England and later of South Africa, and Henry Simons of America. They showed that the classical economists had often been misrepresented by historians and political theorists, and that their system of economic liberty was in many respects superior to that of central direction and planning. See CLASSICAL ECONOMISTS; ECONOMICS; ECONOMICS OF EMPLOYMENT; FREE EXCHANGE; GOLD STANDARD; MULTILATERALISM. See also the original works of the leading economists: Adam Smith, *The Wealth of Nations*, 1776; T. Malthus, *Essay on the Principle of Population*, 1798; D. Ricardo, *Principles of Political Economy*, 1817; J. S. Mill, *Principles of Political Economy*, 1844; Karl Marx, *Das Kapital*, 1867; H. Sidgwick, *Principles of Political Economy*, 1883; A. Marshall, *Principles of Economics*, 1890; Edwin Cannan, *Wealth*, 1914; A. C. Pigou, *Economics of Welfare*, 1932; L. C. Robbins, *The Nature and Significance of Economic Science*, 1932; L. von Mises, *Theory of Money and Credit*, 1934, and *Socialism*, 1938; J. A. Schumpeter, *Capitalism, Socialism, and Democracy*, 1943; T. W. Hutchinson, *A Review of Economic Doctrines, 1870-1929*, 1953; M. St John Packe, *Life of John Stuart Mill*, 1954. Robert L. Heilbroner and

Paul Streeten, *The Great Economists*, 1955, is a good readable introduction.

Economic Warfare, Ministry of, formed on the outbreak of the Second World War, to prevent vital war materials from reaching Germany. Its counterpart in the First World War was the ministry of blockade, but its functions were wider. Control bases were set up at Weymouth, the Downs, Kirkwall, Gibraltar, Aden, and Haifa, at which all shipping bound for the enemy or for neutral ports having access to enemy ter. had to submit to contraband control. The Fr. Gov. used the term 'blockade' for their analogous ministry, which co-operated closely with the M. of E. W. Shipping companies, in order to avoid delay, were encouraged to send advance copies of their vessels' manifests, giving details of all cargo carried, and names of shippers and consignees. One of the chief difficulties of the M. of E. W. was to prevent contraband goods consigned to neutral countries being resold to Germany, since it was no part of Brit. policy to ruin neutral trade with Germany, but only to prevent the entry of essential war materials, such as lead, nickel, copper, fats, etc., and in carrying out this task the M. of E. W. received information from its agents abroad, who reported upon the ultimate destination of contraband shipped to neutrals. While the M. of E. W. was responsible for answering inquiries about ships and cargoes detained by the contraband control authorities, the procurator-general became responsible as soon as the cargo had been seized and applications for release were made to that authority. Applications to bid for prize goods at auction were made to the Admiralty Marshal. Altogether the staff of the M. of E. W. numbered at most about 600.

Economics, term (*oikonomia*) by which the anc. Greeks used to signify the art of prudent and systematic household management, with particular reference to income and expenditure, and to the labour and satisfaction of the wants of the members of the household. Political economy, now generally described as E., later came to signify the art of directing the production and consumption, the incomes and expenditures of the State and its subjects. It was not commonly conceived as a neutral science till the 19th cent., when it became the science of wealth and exchangeable values. In the theoretical treatment of the matter some economists proposed to limit the term E. to the narrow science of wealth; but in about the middle of the 19th cent. the historical school (Roscher and others) maintained that the subject of the study was not wealth, but man's relation to wealth; that it was part of general social science, and could not be detached from ethics and politics. Following Adam Smith, and popular interpretations of the term, E. has been defined as the ordered knowledge of the social phenomena arising out of man's activity in the acquisition and use of wealth. A modern definition, which in many respects is

intellectually more satisfying, is that of Prof. Lionel C. Robbins, who has conceived of E. as the science that studies the principles governing the application of scarce means with alternative uses to a multiplicity of ends. This approach makes situations of scarcity rather than material wealth the subject-matter of E. Above all, it is proper to bear in mind the dictum of the late Lord Keynes that 'The theory of economics does not furnish a body of settled conclusions immediately applicable to policy. It is a method rather than a doctrine, an apparatus of the mind, a technique of thinking, which helps its possessor to draw correct conclusions.' See also ECONOMIC THOUGHT; HISTORY OF; CLASSICAL ECONOMISTS; ECONOMICS OF EMPLOYMENT; GOLD STANDARD; FREE EXCHANGE; MULTILATERALISM; RESALE PRICE MAINTENANCE; KEYNES; and entries for other economists. See L. C. Robbins, *The Nature and Significance of Economic Science*, 1932; F. C. Benham, *Economics*, 1955; R. F. Harrod, 'Economics, 1900-1950' in *The New Outline of Modern Knowledge*, 1956.

Economics and Political Science, The London School of, founded 1895, provides courses leading to degrees of the univ. of London in the faculties of arts, economics and political science (including commerce and industry), and law; also for the post-graduate academic diplomas of the univ. in colonial studies, law, public administration, and psychology; and for the school's certificates in international studies, social science and administration, mental health, applied social studies, and personnel management. There are also special courses in business administration, child care, and trade union studies. The majority of the 3500 students registered at the school are full-time, but part-time and evening students are also accepted. Over 500 graduate students are registered for higher degrees or for research. The Brit. Library of Political and Economic Science, which is housed in the school, is probably the largest in the world devoted exclusively to the social sciences.

Economics of Employment. In 1914, before the First World War, the outstanding problem was unemployment. Linked with this was the hotly-debated question of free trade versus protection. The gold standard was largely taken for granted. After 2 world wars the unemployment problem has been solved in principle; free trade has become multilateralism, and the subject of important international agreements under the auspices of the U.N.; while the gold standard had been twice abandoned, substitute arrangements being likewise brought within the scope of U.N. agreements.

In 1914 men went in fear of the 'Trade Cycle' and recurrent slumps. When the First World War broke out they had already come to regard unemployment as a more or less unavoidable economic scourge and they were the more impressed at its disappearance during the war. They were further impressed by the freedom with which money flowed in wartime; and

by the apparently bottomless state purse where war requirements were concerned. Fears or hopes that the First World War would 'stop within six months' because of financial exhaustion proved groundless. There were shortages of this material and that; but no shortage of money. As soon as the war was over the urgent cry of economy was heard and people felt it strange that while we could afford anything and everything to wage a war, reasonable requests for highly desirable amenities and improvements in well-being were met with the blunt statement that there was no money available. While it was reasonable to suppose that a devastating war would scarcely increase well-being, people nevertheless could not but be impressed with the 'money for war; no money for peace' contrast.

People had heard stories about banks making money—creating money—in the war, and they were ready to believe that such powers should be used in peace-time to create money to be spent on the good things of life. And when, after the war, unemployment arose once more and reached unprecedented levels the 'short of money' argument seemed to run contrary to commonsense. It was contrary. Whilst, given full employment with full efficiency and no increase of saving, every additional pound created must be inflationary, with unemployment in excess of minimum levels there is clearly not enough spending and we must either spend faster the money we have or create money to spend. This seems obvious enough now; but after the First World War there were still elementary misconceptions about the role of money.

Since barter made way for monetary transactions money had been of first, if not fully realised, importance in the economic field. A barter transaction was a complete exchange of goods for goods (or services). But a sale of goods for money is only a 'half' transaction which leaves the seller free to postpone indefinitely the exchange of his money for his ultimate satisfaction in the shape of goods. The vital effects of postponed spending, of saving, were not understood. In particular the effect of underspending on the national income—our aggregate income—was not recognised. It was not appreciated that the national income can rise only if someone spends more and fall only if someone spends less. There was a confused identification of the separate acts of saving and investment (spending). In dispersing this confusion lay the clue to the unemployment problem.

Some unorthodox writers, notably A. H. Abbati in a book pub. in 1924, argued the need for more spending both to cure unemployment and to utilise 'the unclaimed wealth'—to banish 'poverty in the midst of plenty.' The Liberal party, under the influence of Keynes and other economists, took up the idea and fought the 1929 general election with the slogan 'We Can Conquer Unemployment.' Yet the official view, as stoutly maintained by the Treasury, was that little or no employment could be created by state borrowing

or expenditures. It was not until Keynes in 1933 pub. his great work, *The General Theory of Employment, Interest and Money*, that first the academic world and then official circles began to show serious interest in the practicability of governing aggregate spending and so sustaining employment and the general income. In his book Keynes paid tribute to Malthus, Gesell, Hobson, and others. He referred indeed to 'orthodoxy having no valid reply to much of (the) destructive criticism' of Maj. Douglas, of social credit fame. In 1944 the Brit. Gov. White Paper on employment policy officially accepted the obligation to ensure adequate spending. Moreover in the same year by the Bretton Woods Agreement (q.v.), a U.N. conference agreed that 'The purposes of the International Monetary Fund (include) the promotion and maintenance of high levels of employment and real income . . .' It may be objected that the International Monetary Fund pronouncement looked to 'the expansion and balanced growth of international trade' to contribute to this end rather than the reverse; but the Havana Charter for an International Trade Organisation (Mar. 1948) goes further. The Charter's first objective is 'To assure a large and steadily growing volume of real income and effective demand, to increase the production, consumption, and exchange of goods, and thus to contribute to a balanced and expanding world economy.' Further quotations emphasise that it is not a question merely of the expansion of international trade contributing to high employment and income in individual countries but that the argument is now firmly put the other way round:—

Article 2 states that 'The Members recognise that the avoidance of unemployment or underemployment, through the achievement and maintenance in each country of useful employment opportunities for those able and willing to work and of a large and steadily growing volume of production and effective demand for goods and services, is not of domestic concern alone, but is also a necessary condition for . . . the expansion of international trade, and thus for the well-being of all other countries' and that 'The members recognise that the avoidance of unemployment or underemployment must depend primarily on internal measures taken by individual countries . . .'; while Article 3 states: 'Each Member shall take action designed to achieve and maintain full and productive employment and large and steadily growing demand within its own territory . . .'

The discovery of the practicability of a country deliberately maintaining its total spending and income is the outstanding achievement of modern economics, and it is a matter for satisfaction that this great international trade document embodies the idea in such substantial fashion. The idea that each and every nation could, and should, 'assure' its income and effective demand—effective spending—could not have been included in an

international instrument at the end of the First World War. But it was the experience of the First World War and its aftermath of unparalleled unemployment that led the way to the solution of the problem of recurrent unemployment.

See **ECONOMIC THOUGHT, HISTORY OF**; **KEYNES**; **MULTILATERALISM**. See also A. H. Abbot, *Unclaimed Wealth*, 1924, and *The Final Buyer*, 1928; D. H. Robertson, *Banking Policy and the Price Level*, 1926; J. M. Keynes, *A Treatise on Money*, 1930, *The General Theory of Employment, Interest and Money*, 1933; W. H. Beveridge, *Full Employment in a Free Society*, 1944; D. J. Coppock, 'The Theory of Effective Demand in the 1920's,' *The Manchester School of Economic and Social Studies*, 1954.

Economiser, see **BOILERS**.

Economism, name given by its opponents to the less dogmatic trend in the Russian Social Democratic movement of the 1890's and 1900's. There were 2 different branches of E., one maintaining that the workers' task in Russia was to fight for economic gains while politically supporting the constitutional movement of the liberal bourgeoisie; the other maintaining the need for a Social Democratic party but emphasising that the latter's policy should be dictated by the workers. The 2nd group exercised considerable influence in the Menshevik faction. See also **ISKRA**; **MENSHEVIKS**; **RUSSIAN SOCIAL DEMOCRATIC LABOUR PARTY**.

'**Economist, The**,' London weekly jour. founded in 1843 'to discuss financial questions in their wider social and commercial aspect.' James Wilson was the founder and editor from its inception until 1877, when he was succeeded by Walter Bagehot. Under more recent editors such as Lord Layton and Mr Geoffrey Crowther, the field covered by *The E.* has widened to include every aspect of public affairs. The paper has always been a force in politics, perhaps because its consistent policy of putting every question to the 'test of the facts' has resulted in an independent outlook. All articles are anonymous.

Economus, or **Eonumus**, hilly cape on the S. coast of Sicily, situated between Agrigentum and Camarina. It was the site of a battle fought in 311 bc, when the Syracusan Agathocles suffered defeat at the hands of the Carthaginians.

Ecorse, city in Wayne Co., SE. Michigan, U.S.A., on Detroit R. It manufactures steel, chemical products, auto parts, tools, and luggage. Pop. 18,000.

Eorins, **Barre des**, or **Pointe des**, the termination of the Dauphine Alps (q.v.). Until 1862 it was regarded as belonging to Mont Pelvoux, but F. F. Tuckett in that year estab. its separate existence. It reaches a height of 12,450 ft.

Ecstasy (Gk *ekstasiánai*, to derange), a frequent but by no means invariable concomitant of mystical prayer. It occurs most often in the 'illuminative way,' seldom if ever in the much rarer 'unitive' stage (see **PRAYER**). The most characteristic phenomenon of E. is a suspension of

the faculties. This may be, and very often is, only partial: when total it is known as 'ligature.' E. is described with wonderful clarity and abundant detail in the writings of St Teresa and St John of the Cross (qq.v.). E. in the form and circumstances described above is not to be confused with trance (q.v.).

Ectropion, eversion or curving outwards of the eyelids, resulting from chronic, long-continued irritation. This produces an unsightly condition, which comes under the category of 'blear-eyed.'

Ecuador (so called because the equator crosses it), rep. of South America, bounded on the SE. and S. by Peru, on the N. and NE. by Colombia, and on the W. by the Pacific. The boundaries between E. and the neighbouring countries were definitely settled only in 1944, the question having been referred to arbitration. The country is triangular in shape, and may be divided into 3 sections, the narrow, low-lying coast-land, the mt region, and the vast plains to the E. These dists. may be called the Cis-Andine, Inter-Andine, and Trans-Andine respectively. The prin. peaks of the Andes (q.v.) which are situated in E. are Chimborazo, Cotopaxi, Cayambe, Antisana, Cotoacachi (qq.v.), and 6 others with an altitude of over 16,000 ft. The prin. port of the country is Guayaquil, the cap. Quito; and Cuenca, Ambato, and Iñabamba are important cities (qq.v.). The chief rvs. are the Esmeraldas, the numerous streams that combine to form the Guayaquil; these flow to the Pacific. Trans-Andine E. is watered by the upper waters of many tribs. of the Amazon. The fauna include deer, tapirs, peccaries, parrots, humming-birds, and numerous reptiles; the condor, which inhabits the slopes of the Andes, is the most remarkable bird. The climate of the country is hot and unhealthy, especially in the rainy season from Dec. to April, save in the valleys of the middle region, where it is cool and salubrious. Vast areas of the country are covered with virgin forest, rich in rubber, cinchona, dyewoods, and other valuable timbers. Most of this forest area lies in the Amazon basin, but the Pacific slopes of the Andes up to an altitude of 5000 ft. are also forest clad. In the coastal regions and lower riv. valleys tropical farming is carried on, and cocoa, coffee, cotton, tobacco, sugar, and rice are grown; among the foothills and mt valleys is land suitable for grazing and dairy-farming and the cultivation of potatoes, cereals, and temperate fruits and vegetables. The output of cocoa, E.'s staple produce, is declining owing to competition, but it is still the most important export. The *Witchbroom* disease, which appeared in 1921 in the cocoa plantations, has had a disastrous effect on E.'s agric. wealth. Coffee, ivory-nuts, wild rubber, rice, caoutchouc, cinchona bark and fruits are other vegetable exports. 'Panama' hats are another article of trade. E. is the world's chief supplier of balsa wood. Petroleum is the chief mineral; considerable quantities of gold are found, and silver, copper, lead, iron, and coal are known to exist; sulphur is another im-

portant mineral product. Quicksilver is also mined, and emeralds and rubies are occasionally found. A beginning has been made with petroleum exploitation on the Santa Elena peninsula, at Salinas and La Libertad. Communications are bad, roads being very poor; there is river-transport in some dists. and some 1100 m. of railroad. There is no state religion, and toleration prevails; education is fairly well provided for, though methods need improvement. There are univs. at Quito, Guayaquil, and Cuenca, and a law college at Loja, with univ. statutes. There are 3700 primary schools, with 332,000 registered pupils, and 182 secondary with 32,400. Two-fifths of the pop. remain illiterate.

The gov. is in the hands of a president, a council of state, a senate, and a chamber of deputies. There are 2 senators for each of the 18 provs., and a deputy for every 50,000 inhab. elected by universal suffrage; the president is elected for 4 years. No privileges of rank or race are recognised. There are a small army, navy, and air force. In 1954 exports were valued at £36,000,000 and imports at £28,800,000. The area of E. cannot be definitely given, but is probably in the region of 175,000 sq. m. The Galápagos Is. have an area of 2868 sq. m. The Incas of Peru conquered this area towards the end of the 15th cent., and were in their turn conquered by the Spaniards under Pizarro. For 200 years the country remained part of the Sp. state of Peru; then, in 1822, a revolutionary war gave it independence, it becoming a part of the rep. of Colombia. In 1830 there was a civil war in this newly-created rep., and the presidency of Quito became the rep. of Ecuador. Warfare arising out of the border question continued, however, between E. and Peru nearly 100 years; and in 1941 Peru invaded the prov. of El Oro. The dispute was settled by the arbitration of Argentina, Brazil, and the U.S.A., and agreement reached in 1944. The pop. of 3,600,000 is composed chiefly of aboriginal Indians, descendants of the Sp. conquerors and people of mixed blood. See L. Ternaix-Compans, *Histoire du royaume de Quito. Traduite de l'Espagnol* (Velasco, *Historia del reino de Quito*), 1840; C. Cevallos, *Compendio del resumen de la historia del Ecuador*, 1885, and *Resumen de la historia del Ecuador* (Guayaquil), 1886; W. Reiss and A. Stübli, *Hochgebirge der Republik Ecuador*, 1892-3; C. R. Knock, *Ecuador*, 1914; B. Niles, *Casual Wanderings in Ecuador*, 1923; V. W. von Hagen, *Ecuador the Unknown*, 1939; A. B. Franklin, *Ecuador: Portrait of a People*, 1943; Lilo Linke, *Ecuador*, 2nd ed. 1955.

Ecumenical, or **Oecumenical** (Gk *oikoumenikos*, universal, concerning the whole inhabited world), term applied to the decisions of the whole Christian Church as embodied in the definitions of ecumenical or general councils from that of Nicaea onwards (see **COUNCILS**). The Apostles' Creed, the Nicene Creed, and that commonly called the Creed of St Athanasius are spoken of as E. symbols,

being held throughout the whole Church. The Rom. Catholic Church considers a council E. if summoned by the Pope from the Churches in communion with Rome.

Ecumenical Movement, a M. among non-Rom.-Catholic Christians to promote unity between the Christian Churches, by mutual study of each other, and conference and co-operation between them. A conference of various Churches was held at Edinburgh in 1910, followed by the Life and Work Conference at Stockholm, 1927, in which the Eastern Orthodox Church took part, Rom. Catholics being forbidden to do so. After continuation meetings of these 2 conferences in England in 1938 their work was fused that same year at Utrecht under a new committee, the World Council of Churches (q.v.), with a general secretariat at Geneva. It publishes a quarterly, *Ecumenical Review*, and organised its 1st E. conference at Amsterdam in 1948, with a missionary conference at Bangkok in 1949. A 2nd E. conference took place at Evanston, U.S.A., in 1954. The Churches of the E. M. recognise (1) that Christ is the Divine Head of His Body the Church; (2) that the Church of Christ is One, though Christians are now outwardly divided; that Christians must work and pray for the manifestation of the Church in its oneness. At the same time, membership of the World Council does not commit each Church to accepting the other Churches as being such in the true and full sense of the word. See Y.M.C.A. Press, *Proceedings of the 1948 Conference of Autocephalous Churches at the Jubilee of the Russian Church*, Paris, 1952; J. M. Todd, *Catholicism and the Ecumenical Movement*, 1955.

Eczema, see **SKIN**—*Diseases*; (domestic animals, see **DOG** and **HORSE**).

Edam, historic little tn in the prov. of N. Holland, Netherlands; it is one of the so-called dead cities of the IJsselmeer (Zuider Zee), but still very much alive, with a large Gothic 14th-cent. church, a museum in a house in the likeness of a ship built by a 16th-cent. sea-captain, and a bell tower with a very musical chime. E. is noted for its cheese which is exported from the country round it. Pop. 13,400.

E.D.C., see **EUROPEAN DEFENCE COMMUNITY**.

Edda, name given to 2 widely different but vastly important works in Old Icelandic. The original meaning of the word is uncertain.

(1) *Elder* or *Poetic Edda*, a large collection of lays, some mythical, some heroic, one of the great treasures of Germanic tradition. They are composed in 3 different though kindred metres, mainly governed by the same principles as O.E. and other Germanic poetry, and based on alliteration: *fornyrðislag*, *máladráttir*, and, the most irregular of the 3, *ljóðadráttir*. The earliest lays probably date from the 9th cent., the latest from the 11th. All are anonymous. About 1640 Bishop Brynjólfur Sveinsson (q.v.) came into possession of the vellum MS. containing the bulk of these lays, which he ascribed

to Sæmundur Sigfússon (q.v.), but we do not know on what authority. Whether the ascription be accurate or not, the name *Sæmundar-Edda* is irremovably fixed in Iceland. The heroic lays concern events and people familiar to all Germanic races, some legendary, some historical, and give expression to common N. heroic ideals. They are vigorous and often powerfully dramatic in style. Typical examples are *Atlakviða* (Lay of Atli) and *Völundarkviða* (Lay of Volundr-Weland the Smith in Eng. tradition). In comparison the mythological eddic poems are probably more strictly Scandinavian in origin. Some are didactic in their treatment of pagan beliefs and customs, e.g. *Hávamál* (Words of the High One, Odin); others, like *Þrymskviða*, tell stories about the gods. The greatest mythological poem is the *Völuspá* (q.v.).

(2) *Younger or Prose Edda*, or, in Iceland, *Snorra-Edda*, the work of Snorri (q.v.) Sturluson. It consists of 3 main sections: (a) *Gylfaginning* (The Delusion of Gylfi), a concise and surprisingly comprehensive survey of N. mythology, told in the form of a tale which is one of the supreme examples of Icelandic narrative art. (b) *Skáldskaparmál*, or Poetic Diction and Vocabulary, of chiefly technical interest, in which 'kenning' and other stylistic terms are defined, with examples. (c) *Háttatal*, a poem composed in honour of King Hákon of Norway and Duke Skúli Bárðarson. This consists of 102 stanzas in 100 different metres, exemplifying Snorri's marvellous metrical skill, and demonstrating the principles of composition laid down by him in the preceding section. Without this book our knowledge of N. mythology would be pitifully small, and we would then understand little of the Skaldic poetry which has come down to us.

There are sev. Eng. translations of the *Elder Edda*, the most accessible being that of H. A. Bellows. Of the *Prose Edda* translations by A. G. Brodeur and Jean I. Young may be recommended. See also Bertha S. Philpotts, *Edda and Saga*, 1931, and the ed. of the *Eddas* by Gudni Jonsson, with a joint commentary on both, 1949.

Eddington, Sir Arthur Stanley (1882-1944), astronomer and physicist, b. Kendal, Westmorland, and educ. at Owen's College, Manchester, and Trinity College, Cambridge, where he was Senior Wrangler in 1904 and Smith's Prizeman in 1907. He was made a Fellow of his college in 1907, and after 7 years' work (1906-1913) as chief assistant at the Royal Observatory, Greenwich, he was elected Plumian Prof. of Astronomy at Cambridge, his tenure of the chair being combined with the directorship of the Univ. Observatory, and elected a Fellow of the Royal Society in 1914. E.'s main work was not that of an observational astronomer, his time at Greenwich being mainly taken up with statistical examinations of stellar motions, and his researches in this sphere led to the pub. of his *Stellar Movements and the Structure of the Universe*, which appeared in 1914. His

original fields of research were the investigation of the stellar system, the study of the internal constitution of the stars, the interpretation of the theory of relativity and the estab. of the relationship between atomic structure and cosmogony. In 1916 he took up the study of the radiative equilibrium of the stars and reached the conclusion that big stars were tenuous and small stars dense. One of his most striking discoveries was a correlation between the mass and luminosity of stars (1924): he showed that the absolute luminosity of a star increased with its mass and that the luminosity per unit mass also increased. This law enabled astronomers to calculate the masses of the thousands of stars whose luminosities could be correctly measured. He extended his work to cover the Cepheid variables. He confirmed Einstein's theory of relativity by means of the solar eclipse on 29 May 1919 and extended it mathematically. His especial contribution to relativity was a generalisation of Weyl's theory—by which electromagnetic phenomena are included with gravitation in the geometry of the world—giving a conceptual representation of physical phenomena which allowed a new understanding of them. The chief feature of his generalisation is the idea of a unit of interval at every point of space-time; what is called a metre at any place and in any direction is a constant fraction of the radius of curvature of space-time for that place and direction. The last 10 years of E.'s life were occupied with research for precise connections between the cosmological constants and those of atomic physics, and in 1933 he pub. his popular book *The Expanding Universe* in which he developed his views of phenomena that might be expected in a finite expanding spherical universe of the type suggested by Einstein. In 1943 he pub. a complete account of his researches in his lectures before the Dublin Institute for Advanced Studies, entitled *The Combination of Relativity Theory and Quantum Theory*. His great book on the *Relativity Theory of Protons and Electrons*, 1936, is controversial and its value cannot be assessed yet; but his adversaries cannot deny his capacity for advancing rather startling ideas and for the brilliant working out of their consequences. In addition to the above-mentioned great books E. was the author of many other works. One of these was *The Nature of the Physical World* which was based on the Gifford Lectures delivered at Edinburgh in 1927. E. was a brilliant expounder of physics and astronomy with the gift of being able to impart the most abstruse conceptions in the simplest and withal most fascinating language—as may be seen in his *Space, Time and Gravitation*, 1920, and *Stars and Atoms*, 1927; and he was an able interpreter to philosophers of the significance of the most recent scientific discoveries. He was elected a Fellow of the Royal Society in 1914, knighted in 1930, and decorated with the O.M. in 1938. See A. D. Ritchie, *The Philosophy of Sir Arthur Eddington*, 1948.

Eddoes, see COCCO.

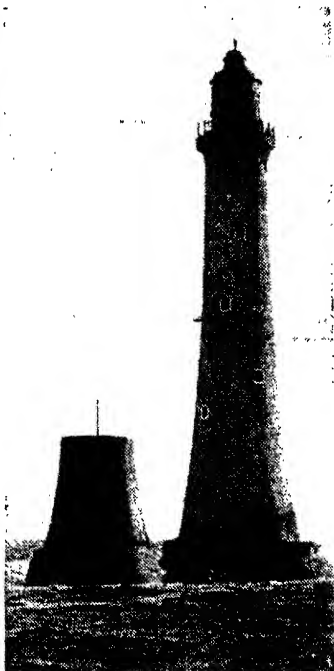
Eddy, Mary Baker (1821-1910), the discoverer and founder of Christian Science and author of its text-book, *Science and Health, with Key to the Scriptures*, and other works on Christian Science. Mrs. E., whose maiden name was Mary Baker, was born to Congregational parents of Puritan ancestry at Bow, New Hampshire, U.S.A., 16 July. She was thrice married. After a frail youth and middle age, most of which time she devoted to study, writing, and experimenting in the various systems of therapeutics in order to discover if possible the cause and cure of disease, Mrs. E., who was a profound student of the Bible, as the result of the instantaneous healing of the effects of an accident considered fatal, discovered in 1866 what she declared to be the divine principle underlying Jesus's works. On this discovery she founded her healing system and named it Christian Science. In 1875 she pub. *Science and Health, with Key to the Scriptures*; founded the 1st Christian Science church, in Boston, Massachusetts, in 1879; estab. successively the Massachusetts Metaphysical College in 1881, *The Christian Science Journal* (monthly), *Sentinel* (weekly), *Herold* (monthly in German), and *Monitor* (daily). Other writings include *The Science of Man*, 1870, *The People's Idea of God and Christian Healing*, 1886, *Rudimental Divine Science*, 1891, *Church Manual*, 1895-1910, *The First Church of Christ, Scientist and Miscellany* (posthumously), 1913. The most thorough authorised biography of Mrs. E. is that by Sibyl Wilbur, *Life of Mary Baker Eddy*, 1913. In it the reader will find details of Mrs. E.'s early life; of her struggles to gain a hearing for her ideas and her book and to protect them and herself from persistent attacks made from various sources—pulpit, Press, and medical—which involved some misrepresentation of both; of her final triumph in which she saw her Church grow, prosper, and become a power. Mrs. E. left the bulk of her estate, valued at \$2,000,000, in trust for the extension and promotion of Christian Science as taught by her. Suits were brought against the executors of her will by a son and adopted son of Mrs. E., but these were finally withdrawn. See also CHRISTIAN SCIENCE.

Eddy, see WHIRLPOOL.

Eddy-currents, circulating currents generated in any solid piece of metal by a varying (moving or alternating) magnetic field. In armatures of machines and in cores of transformers, E. represent an appreciable loss through heating, partly alleviated by building these pieces of thin sheets, with a fine coat of varnish, bolted together. The varnish, being an insulator, obstructs the path of the E. in direction normal to the sheets. E. induced in a metal disc rotating in a magnetic field act as a brake, an action used in supply meters. See ELECTRIC METERS.

Eddystone Lighthouse, light in the Eng. Channel erected to mark a group of rocks

which lie in the fairway from the Start to the Lizard, and are visible only at ebb-tide. The lighthouse is situated about 9 m. from the Cornish coast, and 14 m. SSW. of Plymouth. The present structure is the 4th which has been erected. The 1st was in the form of a wooden polygon 100 ft in height with a stone base; it was built by Henry Winstanley in 1696 and carried away by the storm of



Topical Press

THE EDDYSTONE LIGHTHOUSE

1703. The 2nd was also of wood on a stone base; it was erected by Mr Rudyard in 1706, was 92 ft high, and was burned down in 1755. The 3rd edifice was rebuilt by John Smeaton and was built of blocks of Portland oolite encased in granite and dove-tailed together. It was 26½ ft at the base, 15 ft at the top, and 85 ft in height. The rock on which it was built was undermined, so the structure was taken down and re-erected on Plymouth Hoe; the 1st tower was left on its site. The present lighthouse was designed by Sir J. N. Douglass and completed in 1882; its lamp has a dioptric apparatus and gives a light equal to 358,000 candles. The light gives a double flash every half min. and can be seen for 17 m., being 133 ft above the water.

Ede, James Chuter (1882-), politician. b. Epsom, Surrey, son of a grocer there; educ. at local schools, Dorking High School, and at Christ's College, Cambridge, having won a scholarship from the Battersea Pupil Teachers' Centre. He subsequently became a schoolmaster. He first entered Parliament as a Labour M.P. in 1923. From 1945-51 he was home secretary, and for 6 months in 1951 was leader of the House of Commons.

Edelinck, Gérard (1649-1707), engraver, b. Antwerp, and worked in Paris. He was a pupil of Poilly. Louis XIV entrusted to him the execution of sev. important works. He used every device of the burin to give 'colour,' texture, and light and shade to his plates. Among his works, which number some 400, his 'Holy Family,' after Raphael, may be mentioned; but he is noted for engraved portraits, including those of Le Brun, Rigaud, Philippe de Champaigne, La Fontaine, Colbert, Dryden, and Descartes.

Edelweiss, or *Leontopodium alpinum*, well-known species of Compositae which occurs in its wild state in Switzerland, but can be cultivated in Britain. The dense involucre consists of outer female florets and inner male florets, which are surrounded by hairy bracts.

Eden, George and William, see AUCKLAND, EARL OF, and AUCKLAND, 1st BARON.

Eden, Sir (Robert) Anthony (1897-), Brit. statesman, son of Sir Wm E., of Bishop Auckland, educ. at Eton and Christ Church, Oxford, where he took a 1st in Oriental languages. He served with distinction in the First World War, being awarded the M.C. In 1923 he was elected Conservative M.P. for Warwick and Leamington, representing this constituency continuously until 1957.

Under the National Gov. he became under-secretary at the Foreign Office, 1931; lord privy seal, 1934; and minister without portfolio for League of Nations affairs, 1935. E.'s grasp of foreign affairs was shown by his skilful handling of diplomatic negotiations during 1935, and in Dec., when Hoare resigned on the pub. of the Hoare-Laval proposals on Abyssinia, he was made foreign secretary. E.'s views differed fundamentally from those of Chamberlain, Baldwin's successor as premier, and in Feb. 1938 he resigned as a result of a difference of opinion with Chamberlain over proposals for an Anglo-It. pact.

E. was recalled to office on the outbreak of the Second World War, becoming secretary of state for dominion affairs. He was made secretary for war in Churchill's cabinet (May 1940) but in the same year became once again foreign secretary, a post he held until 1945, doing much to consolidate Anglo-Russian friendship after 1941. From 1945 to 1951 his party was in opposition, but in 1951 E. returned to the Foreign Office. His tenure of office was marked by sev. conspicuous successes; in 1954 the Geneva Conference produced a settlement of the Indo-China problem, and in this E. played a conspicuous part. The London agreement (1954) which

solved the problems of co-ordinated W. European defence created by the Fr. Assembly's final rejection of E.D.C. was also due in great measure to E., and has been considered the greatest achievement of his entire political career.

E. succeeded Sir Winston Churchill as prime minister and Conservative leader in 1955. At the general election in May his party was returned with an increased majority. At first the administration seemed to run smoothly: the meeting of heads of govts. at Geneva in 1955 was



Karsh of Ottawa

SIR ANTHONY EDEN

followed in early 1956 by the visit of Bulganin and Krushchev to London, and the friendlier atmosphere of foreign affairs was matched by increasing prosperity at home. But throughout 1956 the situation deteriorated: rising prices, the 'credit squeeze,' and limited unemployment produced discontent at home, and, abroad, the nationalisation by Egypt of the Suez Canal in July was soon followed by an Israeli-Egyptian war in which E. sanctioned Franco-Brit. armed intervention. By the end of the year Brit. influence in the Middle East was at a low ebb; but there were signs that the Anglo-Amer. alliance, much shaken by the Suez events, was reviving. E.'s health, however, had broken down and on 9 Jan. 1957 he resigned the premiership. Subsequently, he announced his intention to resign his parl. seat. He was succeeded as premier by Harold Macmillan (q.v.). E. was created Knight of the Garter, 1954. His publications include: *Foreign Affairs*, 1939, and *Freedom and Order*:

Days for Decision (selected speeches), 1949. See *lives* by L. Broad, 1955; A. Campbell-Johnson, 1955; and W. Rees-Mogg, 1956.

Eden, riv. of England, which rises among the Pennines, on the borders of Westmorland and Yorks. It flows in a NW. direction, through Appleby, Eden-hall, and Carlisle. After a distance of 65 m. it forms a wide estuary at Rockcliffe, in the upper part of the Solway Firth.

Eden, Garden of (Heb. 'delight'), described in Genesis as the first home of man. The Greek for garden gives us our word paradise. There has been much discussion regarding the exact site of Eden, and many futile efforts have been made to reconcile the mythical geography of Genesis with modern knowledge. Recent discoveries, however, have shown that *Edin* was the Sumerian name for the plain of Babylon, and at the S. end of it was the city of Eridu, and near it a beautiful garden said to contain the Tree of Life. The accepted site to-day appears to be El Qurnah, in Iraq. The riv. with its 4 heads, spoken of in Genesis, must have been the Persian Gulf, which the Babylonians regarded as a riv. An idea similar to that of the Tree of Life appears also in the *Vedas*, in which the first man is represented as leading men to the garden of immortality where he dwelt in fellowship with the gods; but the idea of the primeval state of man, in the biblical account of Paradise, is more religious and ethical than any of the myths that may resemble it in other ways. See the commentaries on Genesis and F. Delitzsch, *Wo Lag das Paradies*, 1881, and *Im Lande des einstigen Paradieses*, 1903.

Edenbridge, mkt tn of Kent, England, 10 m. W. of Tunbridge Wells. Hever Castle, near by, was once owned by the Boleyn family, and here Anne Boleyn made her home. Built in the 15th cent., it is now restored as the country seat of Lord Astor of Hever. Pop. 3500.

Edenderry, mkt tn of co. Offaly, Rep. of Ireland, near the Offaly-Kildare border. Pop. 2600.

Edenhall, vil. and par. in Cumberland, England, on the R. Eden, 3½ m. NE. of Penrith. Here is the site of the family seat of the Musgraves, owners of the glass cup known as *The Luck of Eden Hall* (at present in the Victoria and Albert Museum, London), the subject of Uhland's ballad, trans. by Longfellow. Pop. 216.

Edentata, order of mammals characterised by the absence of teeth in the front of the jaws and by the simple structure of their cheek-teeth, which are composed solely of ivory and cement, without any trace of enamel. They are of a low degree of organisation, although many of them are specialised for particular modes of life. All Edentates are either arboreal or terrestrial. Sloths, anteaters, and armadillos are the main members of this order.

Edenton, city of N. Carolina, U.S.A., co. seat of Chowan Co., with many historic associations. On 24 Oct. 1774 51 ladies at the 'Edenton Tea Party' signed resolu-

tions that they would not use tea or anything manufactured in England until the tax on tea should be repealed. The royal governors lived here. During the 18th cent. the N. Carolina legislative assembly met here, and many important statesmen lived near E. It is a trade centre for an agric. area. Pop. 4468, of whom a large proportion are negroes.

Ederle, Gertrude (1908-), Amer. swimmer, the 1st woman to swim across the Eng. Channel, which she did from France to England in 1926 in 14 hrs 34 min.

Edessa: 1. See *URFA*.

2. Tn of Greece, cap. of the dept of Pella, on the railway from Salonica to Monastir. It is a centre of the textile industry. Pop. 15,000.

Edfu, or *Idfu*, tn of Upper Egypt, situated on the W. bank of the Nile, in lat. 24° 59' N. It is the anc. Apollinopolis Magna, and is noted for its remarkable sandstone temple of E., which is the most complete Egyptian temple existing. It was begun by Ptolemy XIII in 57 BC and took over 180 years to complete. It is approached by 2 large pylons of great antiquarian interest. The tn of E. stands 484 m. SSE. of Cairo, and has manufs. of earthenware.

Edgar, or *Eadgar* (d. 975), surnamed 'The Peaceable,' Eng. king, succeeded at the age of 17 to the kingdoms of Mercia and Northumbria, but on the death of his eldest brother, Edwy, became king of the rest of England (959). After his coronation in 973 he is said to have been sworn allegiance to by 6 (or, according to some sources, 8) other Brit. kings at Chester. His reign was remarkably peaceful and it is chiefly memorable for E.'s friendship with St Dunstan (q.v.). All royal assistance was given to St Dunstan in his reorganisation of the Eng. Church.

Edgar Atheling (d. c. 1125), Eng. prince, great-nephew of Edward the Confessor. He must have been little more than a child on Edward's death, and it is hardly surprising that his claim to the throne was passed over in favour of Harold of Wessex. When Harold was killed at Hastings, the surviving Eng. leaders turned to E. as the last male representative of the line of Cerdic. E., however, swore fealty to William at Berkhamsted, but in 1067 judged it prudent to take refuge in Scotland with his mother and sister. He later went to Flanders, but about 1074 returned to England and was reconciled to William. E. helped to get his nephew Edgar on the Scottish throne, 1097; went on the First Crusade, and fought for Robert against Henry I at Tinchebray. He was taken prisoner by Henry, but was subsequently released and the rest of his life was apparently uneventful.

Edgbaston, dist. of Birmingham, England, to the W. of the city centre, a charming and spacious suburb. Cardinal Newman lived and worked at the Oratory of St Philip Neri in Hagley Road. Here are the main buildings of Birmingham Univ., including the famous Barber Institute of Fine Arts, the new Queen Elizabeth Hospital, and the Botanical Gardens.

Edgehill, hilly ridge in Warwickshire, England, 7 m. from Banbury. It is noted as the scene of the first battle of the Civil war in 1642. The country below was called the 'Vale of the Red Horse' from the figure of a horse formerly cut in the red soil of the hillside.

Edgeworth, Henry Essex (1745-1807), Irish priest, known as 'Abbé Edgeworth', b. Edgeworthstown, Ireland, where his father was rector. In 1748 E. was converted to Catholicism and went to Toulouse. E. entered the priesthood, and when he was ordained took the surname of De Firmont. He was made confessor to the princess Elizabeth in 1791, and in 1793 to her brother, Louis XVI, whom he attended to the scaffold. In 1796 he went to England, and was made chaplain to Louis XVIII, who was in exile there. He d. at Milan of a fever caught whilst attending the Fr. prisoners.

Edgeworth, Maria (1767-1849), novelist, b. Black Bourton, near Oxford, daughter of Richard Lovell E. (q.v.). Much of her life was spent on her father's Irish estate at Edgeworthstown. Her father, who was himself a writer on education and mechanics, gave much attention to her training, and she assisted him in his writing, especially in *Practical Education*, 1798, and the *Essay on Irish Bulls*, 1802; she also wrote stories to amuse her father's large family by his 4 wives, with the last of whom she enjoyed a close friendship. She soon discovered that her talent lay in fiction, and from 1800, when her first novel, *Castle Rackrent*, appeared, until 1834, when her last, *Helen*, was pub., she continued to produce a series of tales marked by ingenuity of invention, humour, and acute delineation of character. Sir Walter Scott, whose friend she was, declared that it was her success in picturing Irish character that gave him the idea of doing the same services for Scotland. In addition to the novels mentioned above she wrote *Belinda*, 1801, *Leonora*, 1806, *Tales of Fashionable Life*, 2 series, 1809, 1812, *The Absentee*, 1809, *Ormond*, 1817, and completed her father's *Memoirs*, 1820. She also pub. sev. books for or about children, including *Moral Tales*, 1801, *Popular Tales*, 1804, *Frank*, 1822, and *Harry and Lucy*, 1825. See studies by H. Zimmer, 1883; E. Lawless, 1904; also A. J. C. Hare, *The Life and Letters of Maria Edgeworth*, 1894; A. Paterson, *The Edgeworths*, 1914; F. V. Barry, *Maria Edgeworth: Chosen Letters*, 1931; and S. H. Ronilly (ed.), *Romilly-Edgeworth Letters*, 1936.

Edgeworth, Richard Lovell (1744-1817), writer, b. Bath. Remarkable for his powers of mechanical invention, he was a member of the last Irish parliament before the Union. He educ. his children in the spirit of Rousseau's teaching, and wrote on *Practical Education*, 1798, in collaboration with his daughter, Maria E., the novelist (q.v.).

Edgeworthstown, tn of co. Longford, Rep. of Ireland, the home of the Edgeworth family. Pop. 550.

Edgren, Anna Carlotta (Cajanello, Duchess of) (1849-92), Swedish authoress,

b. Stockholm. Her first husband, Judge E., did not share her advanced views, and after her divorce she married Pasquale de l'ezzo, duke of Cajanello. She pub. her 1st vol. of stories in 1869, entitled *By Chance*; later she wrote plays, of which the chief are *The Struggle for Happiness*, 1887, and *How One Does Good*, 1895. Most of her problem plays and stories now seem dated.

Edgware, anct par. of Middx, England, now in the bor. of Hendon, 11 m. NW. of London. It lies on the E. side of the anct Watling Street, known between here and London as the E. Road.

Edict of Nantes, edict signed by Henry IV of France in April 1598. It allowed the Huguenots free exercise of their religion, gave them definite rights of public worship, threw open to them all the offices of state, and estab. a Protestant chamber in the *Parls parlement*, and joint chambers in the local govts. This measure did much at the time to promote the internal peace and prosperity of France, but gradually the Huguenots' rights were not maintained in practice, and in 1685 Louis XIV formally revoked the E. of N. As a result considerable numbers of one of the most intelligent and industrious sections of the community left the country. They settled down in Protestant countries, many in Holland, Prussia, and Great Britain, and were generally a great acquisition to whatever country they chose.

Edictal Citation, term of Scots law used to describe a citation where personal service of the summons is impossible, as in the case of a non-resident debtor. Originally a proclamation was made, and an edict or order of the court was posted up in a public place. Now, however, a copy of the summons with a schedule of the citation attached is sent to the keeper of E. C.s at the Edinburgh General Register House.

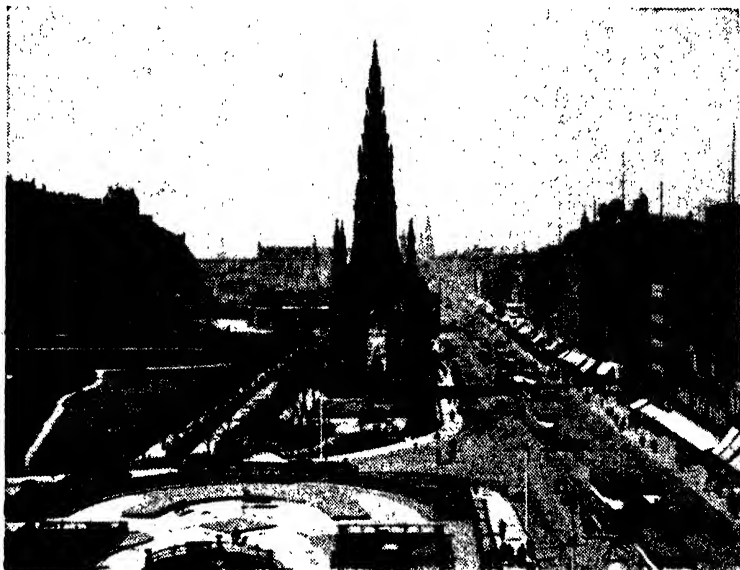
Edinburgh, Philip, Duke of, see PHILIP. **Edinburgh, Dukedom of**, was first conferred in 1726 by King George I on his eldest grandson, Frederick. The dukedom having merged in the Crown by the accession of Frederick's son as George III, an earldom of E. was subsequently held by 2 Hanoverian dukes of Gloucester, and the dukedom itself revived for Queen Victoria's 2nd son, Alfred, in 1866. It became extinct on his death in 1900, his only son having predeceased him, and he was succeeded as duke of Saxe-Coburg by his nephew, Leopold Charles, Duke of Albany. The title of duke of E. was again revived in 1947, being one of those conferred, together with the prefix 'His Royal Highness,' on Lieut. Philip Mountbatten, R.N. (formerly Prince Philip of Greece and Denmark, which title he relinquished on being naturalised in Feb. 1947), on his marriage (20 Nov. 1947) to Princess Elizabeth, the elder daughter of King George VI and Queen Elizabeth and then Heiress-Presumptive to the throne. The other titles conferred on him at the same time were baron Greenwich and earl of Merioneth, one of the new dignities, therefore, being derived from England, one

from Scotland, and one from Wales. The heir to the dukedom (and 1st in succession to the throne) is Prince Charles Philip Arthur George, b. 14 Nov. 1948. *See also* PHILIP.

Edinburgh, cap. of Scotland, and one of the most ancient and finest cities in the U.K.; situated on the S. shore of the Firth of Forth, 390 m. N. of London, and 105 m. from Aberdeen.

The origin of E. is involved in obscurity, like most towns whose hist. extends for a

yet. King Robert Bruce held a Parliament at Holyrood in 1327, and his last Parliament was held in E. in the following year, but the chief importance of the town was from a military point of view. E. was held by the Eng. for sev. years, but with the outbreak of war between England and France in 1338, the Scots regained their lost ground. A new era began for E. with the accession of James I. E. may be called the cap. of the Stuarts; it shared the vicissitudes of that dynasty, and sank into



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PRINCES STREET, EDINBURGH, FROM THE EAST

On the left is the Castle, and in the centre the Scott Monument.

long way into the past. The most probable account of the origin of the name E. is that it was derived from the Northumbrian King Eadwine; it had obtained the name Eadwinesburg or Edwinesburg as early as the beginning of the 7th cent. After this time very little is known of the hist. of E. until the reign of Malcolm Canmore (the son of Duncan I), when Donald Bane besieged E. Castle after Malcolm's death. In the year 1128, E. is called by David I 'his burgh of Edinburgh'; David lived more at E. than his predecessors had done, and this custom was followed by his descendants. By the treaty of Falaise, in the reign of William the Lion, E. Castle and other Scottish garrisons were ceded to England, but were restored as part of Ermengarde de Beaumont's dowry when she married Wm. Though E. had been frequently used as a royal residence, it was by no means the cap. of the country

comparative unimportance when they deserted it. It was not a walled town until the middle of the 15th cent. The 1st printing press was erected in the beginning of the 16th cent.; in the succeeding cent. E. was recognised as the undisputed cap. of the country. At an early period of the Reformation E. was converted to the Protestant faith; and in succeeding ages the great majority of its inhab. adopted the Calvinistic creed and adhered rigidly to the Presbyterian form of worship. The Union of England and Scotland aroused great excitement in E., and attempts were made to intimidate the members of the Scottish Parliament who were favourable to the Act of Union, but the Act was eventually passed without bloodshed. An unsuccessful attempt was made by the Jacobites to surprise the castle in the rebellion of 1715. In 1745 the Jacobites were more successful, and

were masters of the tn from 15 Sept. to 31 Oct., but could not reduce the castle. The Porteous affair of 1736 was a remarkable occurrence; the populace lynched the captain of the guard, Porteous, who had fired on the crowd and killed 6 persons. The city was ordered to pay £2000 to the widow of Porteous; the ringleaders were never discovered. In 1779 a mob burnt one Catholic church and plundered another during the parliamentary discussions on the subject of Catholic claims. The societies which were formed in E. about the time of the Fr. Revolution in sympathy with the principles prevailing in France were put down with great severity. George IV visited E. in 1822, and won great popularity by wearing the Highland dress. He was the 1st sovereign to visit the city since 1650. Holyrood was granted as a residence to the exiled King of France, Charles X., in 1830, and in 1842 Queen Victoria and Prince Albert visited the city.

Three eminences which run from E. to W. form the site of the city, which is surrounded on all sides, save the N., by hills. The steep ridge descending from the castle rock to the Netherbow Port constituted the anc. city, and on it the High Street is built. To the N. of this ridge was formerly the North Loch. The New Town lies on the ground which rises beyond the valley of the North Loch, now occupied by Princes Street gardens and railway lines. As viewed from the Calton Hill, the following is a bird's-eye view of the city. On the right may be seen the New Town, with its wide streets and stately houses stretching down towards the shore. Princes Street, nearly a m. long, lies opposite; whilst the serried masses of houses forming the Old Town stretch on the left as far as the castle. There are still further streets on the S. towards the Braid Hills, and on the E. to Arthur's Seat; whilst the northward view from the Calton Hill includes Leith, the Firth of Forth, and the hills of Fifeshire. The valley which formerly was the North Loch separates the New Town from the Old Town. The former occupies a ridge which is broader and not so steep as that which forms the site of the Old Town. The slopes on both sides of the hollow are laid out as public gardens. This quarter of the city has many attractions, though it does not possess the historical character and interest of the older portion of the tn. The streets and squares are well planned, and the buildings, most of which are built of calciferous sandstone quarried in the vicinity, are magnificent. The extensive pleasure grounds in this quarter of the city are another attraction. The most noteworthy streets in the New Town are Princes Street, George Street, and Queen Street, which all run parallel to each other, eastward and westward. At the W. end of Princes Street are the Caledonian Railway Hotel and station, St Cuthbert's Church, and St John's Episcopal Church; at the E. end are Waverley station and hotel, the latter one of the largest in Britain, the General Post Office, and the Register House (1774),

Calton Hill forms the E. extremity of the street; this is a rocky eminence studded with monuments, including the Nelson Column and the unfinished National Monument. Salisbury Crags, a huge belt of precipitous rock nearly 580 ft in height, rises beyond the E. extremity of the city; whilst behind this is Arthur's Seat, a conical hill, roughly in the form of a lion couchant, 822 ft high, with a narrow rocky summit. On the slopes of the Calton Hill are situated the Royal High School (founded in c. 1518), the Burns Monument, and St Andrew's House, a modern building occupying the site of the tn and co. prison, the H.Q. in Scotland of the Scottish Office. George Street, which is bounded by St Andrew's Square and Charlotte Square, has many fine statues and houses with literary associations. Queen Street contains the National Portrait Gallery and Antiquarian Museum, presented by J. R. Findlay; charming views of Fife may be obtained from its cross streets. The Water of Leith at Canonmills and Stockbridge forms the boundary of the New Town; many famous buildings and places are situated in this neighbourhood, including the E. Academy (founded 1823), Fettes College (founded 1870), and Stewart's College (founded 1855). A feature of E. is the number of Georgian buildings in the New Town. This may be seen in the work of Robert Adam which includes a large part of the univ., the N. side of Charlotte Square (recently restored to its original state), the tomb of David Hume, and the Register House.

The prin. street in the Old Town is that built on the steep ridge which extends from the castle rock to Holyrood. This old street is more than a m. in length, and is called, at different points, Canongate, Netherbow, High Street, Lawnmarket, and Castle Hill, the whole being often termed 'the Royal Mile.' The aspect of this backbone of Old E. is quite in keeping with its traditions; the houses are all very lofty; amongst them are some very old buildings. The High Street opens into Parliament Close or Square on the right-hand side, going E.; the latter contains the old Parliament House, built between 1633 and 1640, and St Giles's Church, a large and anc. edifice in the later Gothic style of architecture, renovated in 1830. The anc. cross of E., which was removed in 1756, but in 1885 was restored at Gladstone's expense, now stands near the E. end of the church. The Parliament House, the building in which the Scottish Parliament met before the Union, is a magnificent hall, with a lofty roof, and contains various marble statues of celebrities. The Advocates' Library, founded in 1682 (since 1925 the National Library of Scotland), and the Signet Library are adjoining buildings to the Parliament House. John Knox's grave is situated in Parliament Close, to the rear of St Giles's, while a house in which he lived for a time adjoins the Netherbow port, one of the anc. gates of the city. Many other historic sites are situated in the High Street, including Burns's lodgings, Riddell's Close, Ramsay Lodge,

Flesh-market Close, Old Fishmarket Close, and World's End Close. Past the Netherbow is the Canongate, a burgh founded by David I's charter of 1123 to the Abbey of Holyrood. At one time many of the nobility of E. lived here, and the Moray House, the Huntly House, and Queensbury House still remain. The Old Canongate Tolbooth and the Canongate church may also be seen in the Canongate; the closes off this street are as historically interesting as those of the High Street. Though at the present time it is hard to realise its former splendour, many parts of the Royal Mile have been or are being restored or reconstructed. The closes are numerous narrow lanes which descend laterally in regular rows from the main street; they are not as a rule more than 6 ft. wide at the entrance, and those which admit of the passage of a carriage are called 'wynds.' The old street called the Cowgate runs to the S. of and parallel with the High Street, and opens at the W. end into the Grassmarket. At one time many aristocratic mansions stood there, but now it is a very poor street. George IV Bridge and South Bridge cross the Cowgate at a height of 2 or 3 stories; the univ. is the chief ornament of the latter, whilst the National Library of Scotland and the Carnegie Free Library stand on the former. The castle of E. is one of the most interesting of the public buildings. The oldest part is St Margaret's Chapel, built in the 11th cent., which stands on the highest point of the castle rock; nearby is the old piece of ordnance called 'Mons Meg,' forged in the 15th cent. The Great Hall, built at the beginning of the 16th cent., was restored in 1888-9; the room in which Queen Mary gave birth to James VI is situated at the E. end of the SE. side of the castle. Holyrood Palace, standing at the lower end of the street leading to the castle, was begun by James IV, whilst the greater portion of it was built in the time of Charles II. The apartments occupied by the hapless Queen Mary are in the NW. angle of the building. The ruins of the chapel belonging to the Abbey of Holyrood, founded by David I in 1128, adjoin the chapel of Holyrood Palace on the N. side.

Among the other noteworthy public buildings of E. are the Royal Scottish Academy, the National Gallery, the Surgeons' Hall, the General Post Office, the Royal Scottish Museum, the Tron Church, and the Bank of Scotland. The monument to Sir Walter Scott, situated on the S. side of Princes Street, and designed by G. M. Kemp, is the finest in the city. The seated figure of Scott is of marble and the monument is in the form of an elaborate Gothic cross 200 ft. in height. Other monuments in the city are to Burns, David Hume, Allan Ramsay, James Watt, Livingstone, Wm Pitt, Dugald Stewart, John Playfair. The Scottish National War Memorial was opened by the prince of Wales on 14 July 1927. The actual memorial, which reposes in a shrine in a noble structure on the apex of the castle rock on the site of the old barracks, consists of the rolls of

honour containing the names of over 100,000 Scots who fell in the First and Second World Wars. The E. Cenotaph or Stone of Remembrance in the High Street before the City Chambers was unveiled by Prince Henry the same year.

The advisory committee on city development, appointed by the E. Corporation in 1943 to report on the general considerations governing the development and redevelopment of E. as the cap. of Scotland and the preparation of planning schemes, made a number of important and far-reaching recommendations. In 1949 a civic survey and plan for E. prepared by town planning consultants appointed by the corporation confirmed these recommendations and indicated proposals by which they might be realised. The development plan, submitted to the secretary of state in 1953 in accordance with the town planning acts, was prepared after a further examination of the recommendations and includes proposals for those parts of the recommendations which can be considered as likely to be realised by 1973. Since 1943 a substantial amount of development which is in accordance with the recommendations of the advisory committee and subsequent reports has been completed in E. New housing areas have been planned as self-contained communities in the W., S., SE., and E. of the city; an industrial estate has been estab. at Sighthill; the R.A.F. airfield at Turnhouse has been and is being used by civil aircraft with an airport building for passengers; a plan for classifying the academic area of the city within a primarily cultural and educational zone S. of the High Street has been prepared and is being completed with new buildings; a central 'bus station has been temporarily provided off St Andrew's Square; and the reconstruction of the High Street and Canongate is being substantially completed. Particular consideration is being given to developments in Princes Street, having regard to the unique character of that thoroughfare. The corporation is undertaking the removal of unsatisfactory housing areas in the centre of the city and elsewhere, and the redevelopment of the sites for purposes which are in accordance with the proposals shown in the development plan submitted to the secretary of state.

The educational and cultural sides of E. are most important; in addition to the univ. (for which see separate article) it has many schools. Amongst them may be mentioned the former college for educating theological students of the United Free Church, now part of the Church of Scotland Theological College, the Royal High School, Edinburgh Academy (1824), Fettes College (an endowed high school), Loretto School, near E. (founded 1827), Merchiston Castle School, and the training colleges for teachers. The Heriot Trust and the Merchant Company are represented by such institutions as George Heriot's School (1659), the Heriot-Watt College (1885), George Watson's College (1738), Daniel Stewart's College, and the Queen Street and George Square

colleges for ladies. A notable ann. event in the cultural life of E., and indeed of Great Britain, is the E. International Festival, first held in 1947.

The most important industries of E. are brewing and distilling, for which it has been noted for more than 200 years, and printing and publishing with the connected industries of paper-making, book-binding, and map-making. Other manufs. are rubber, biscuits, hosiery, and knitted goods, paper-making machinery, and electrical appliances. Lesser manufs. include rope and sail cloth, glass and sealing wax. There is shipbuilding and ship-repairing at Leith, which was incorporated in the city of E. in 1920. Nearby is the E. airport at Turnhouse. Sev. magazines of a high standard have been, or are, pub. in E.; the *Edinburgh Review*, 1802, *Blackwood's Magazine*, 1819, and *Chambers's Journal*, 1832, were all started there.

The city returns 7 members to Parliament (including the member for Leith); it is governed by a tn council of 71 members. Area 34,781 ac.; pop. 467,000.

See O. Smeaton, *The Story of Edinburgh*, 1907; G. Home, *Edinburgh, 'Mine own Romantic Town'*, 1927; R. Chambers, *Traditions of Edinburgh*, 1929; E. Grierson, *Things seen in Edinburgh*, 1925; Rosaline Masson, *Edinburgh*, 1931; I. Lindsay, *Georgian Edinburgh*, 1948; Chiang Yee, *The Silent Traveller in Edinburgh*, 1948; S. Sitwell and F. Bamford, *Edinburgh*, 1948.

'*Edinburgh Review*.' The, or *Critical Journal*, Whig quarterly, founded in 1802 by Francis Jeffrey, Sydney Smith, F. Horner, and Henry (afterwards Lord) Brougham. It was the earliest of the great reviews, and has had a far-reaching influence on literature and politics. Sydney Smith was the 1st editor. Its early literary criticisms were amazingly savage, notably in the case of Wordsworth and Southey, and gave rise to Byron's satire, *English Bards and Scotch Reviewers*. It ceased pub. in 1929. See (for the hist. of the *Edinburgh Review* from 1802-15) J. Clive, *Scotch Reviewers*, 1957.

Edinburgh University, youngest Scottish univ., founded in 1583 as the College of Edinburgh (the Town's College) by the tn council of Edinburgh under powers, including the conferring of degrees, granted by a charter of King James VI in 1582. An Act of Confirmation in 1621 secured to it all the rights and privileges of other Scottish univs. It was still legally the Town's College until 1858 when, by the Universities (Scotland) Act, all the Scottish univs. received new and autonomous constitutions. Its constitution now depends on the Universities (Scotland) Act of 1889 with the ordinances of the commissioners under that Act and the univ. court ordinances subsequent to it. The chief constitutional officers are the chancellor, the vice-chancellor, who is also the principal, and the rector, who is elected by the matriculated students for a period of 3 years. Rectors who have held office since the 1858 Act include W. E. Gladstone (1859), Thomas Carlyle (1865), Winston Churchill (1929), and Sir Alexan-

der Fleming (1951). There are faculties of divinity, law, medicine, arts, science, and music. The Old College, begun in 1789 by Robert Adam, completed in 1828 by W. H. Playfair, now houses the administration offices, the library (640,000 vols.) with its beautiful library hall, the common rooms and a few arts depts. Other buildings include the New Buildings (School of Medicine), the Kings Buildings (science), the McKwan Hall (the graduation hall), the Univ. Union, the Dental College, the Veterinary College, and Adam House (examination halls and theatre). The number of students (1954-5) was 5,877.

Edinburghshire, see MIDLOTHIAN.

Edingen, see ENGHEN.

Edirne, formerly **Adrianople** (Gk. city of Hadrian), lt and tn of the same name in European Turkey, at the confluence of the Tunja and Maritza (anc. Hebrus). The Rom. emperor Hadrian embellished it and gave it his name; from 1361 to 1453 it was the residence of the Turkish sultans. It was occupied by Russians (under Gen. Diebitsch) in 1829, and again in 1878. The mosque of Sultan Selim II is a magnificent building, while the mosque of Sultan Mourad I and the bazaar of Ali Pacha are worthy of note. Its manufs. are silk, wool, cotton, perfumes, and it has some dye-works and tanneries. During the Balkan wars it was besieged and taken by the Bulgarians and Serbians, but in spite of the treaty of London it remained in the hands of the Turks. By a secret treaty between the Central Empires and Bulgaria, the latter, as the price of her entry into the First World War on the side of those empires, was promised, at the expense of Turkey, a strip of land along the Maritza, controlling both that riv. and E. Restored to Turkey after the war. Pop. (lt) 253,319; (tn) 30,000.

Edison, Thomas Alva (1847-1931), Amer. inventor, b. Milan, Ohio, was of Dutch origin on his father's and Scottish on his mother's side. Beginning work at the age of 12 as a newsboy on the Grand Trunk line running to Detroit, he owed all his distinction and advancement to his own faculties. After printing and circulating the *Grand Trunk Herald*, the 1st newspaper to be issued from a railway train, he eagerly assimilated the principles of telegraphy from a friendly station-master. From 1871 he was superintendent to the New York Gold and Stock Company, till in 1876 he set up his own works at Menlo Park, New Jersey. Here his extraordinary inventive genius had full scope. The following is a mere catalogue of some of the more important of his 1000 patents: the duplex, quadruplex, etc., system of telegraphic transmission, the printing telegraph for gold and stock quotations, a microtasmeter (for detection of small changes in temp.), the aeroplane, the megaphone, the phonograph, or gramophone, the incandescent light, the kinetoscope, and the carbon telephone transmitter. It was an observation made by E. in one of his experiments which led to the invention of the thermionic valve. E. also invented a system

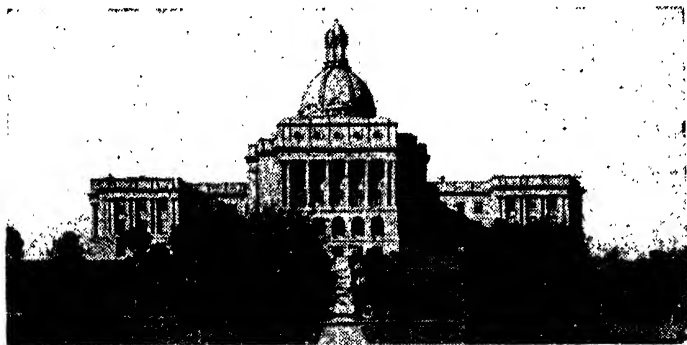
of wireless telegraphy to and from moving railway trains. He is also credited with a part in the invention of motion pictures and the alkaline storage battery. During the First World War he designed and operated benzol plants and plants for carbolic acid. See W. K. L. and A. D. Dickson, *Life and Inventions of Edison*, 1894.

Edmer of Canterbury, see EADMER.

Edmonton: 1. Cap. of Alberta, Canada, on the N. Saskatchewan R. at an altitude of 2182 ft., an important railway centre with large railway car shops, served by 12 branch lines. E. is a market for Central and N. Alberta, N. Brit. Columbia, and N.W. Territories. E. has 6 radio

Edmund I (d. 946), Eng. king. He succeeded to the throne in 938, but had already played a prominent part in the battles of the previous reign. In 940 E. was forced to cede land approximating to the modern cos. of Lincs, Derby, Notts, and Leicester to Olaf Guthfrithson, but regained these 2 years later, recovered York, and in 945 ravaged Strathclyde. He was killed by a criminal, who had been previously banished from the court.

Edmund II (Ironside) (c. 1016), king of the Eng. On the death of Ethelred II, E.'s father, the citizens of London chose E., but a large and important gathering of nobles and clergy at Southampton elected Canute (q.v.) as their king. There



Canadian Government

PARLIAMENT BUILDINGS, EDMONTON

stations, including the only Fr.-language station in Alberta. Many large and important industries have estab. plants on the outskirts of the city, and most of the major oil companies have erected processing plants close by. Besides being an industrial centre, E. is the centre of one of the richest agric. areas in the prov. It is the gateway to the vast mineral wealth of the N. It is also the seat of the prov. univ. located on the banks of the N. Saskatchewan R. Pop. 245,600.

2. Suburb of London, on the E. border of Middx. It has attained some notoriety in literature owing to the largely fabulous actions of the Merry Devil of E. and John Gilpin. It was once noted for a fair that was closed c. 1870. Keats lived here when he was apprenticed to a local surgeon. The par. church, with a 15th-cent. tower, has interesting monuments. Charles and Mary Lamb are buried in the churchyard. E. returns 1 member to parliament. Pop. 100,300. (See also SOUTHGATE.)

Edmund, St (849-870), king of East Anglia. He succeeded to the throne when quite a boy. In 870 E. fought the Danes, but was beaten and killed. His shrine at Bury St Edmunds was famous in every part of England, and his saintly reputation extended all over Europe. His feast is on 20 Nov.

E.E. 4--X

was fierce warfare between the 2 rivals, culminating in the battle of Assandun (Ashingdon). E. was soundly defeated, and agreed to divide the kingdom with Canute, Canute taking the north and E. the south. E. d. soon after this.

Edmund (Rieh), St (1180-1242), Eng. ecclesiastic, b. Abingdon, near Oxford; he studied at Oxford Univ., and later in Paris. In 1233 he was elected archbishop of Canterbury at the suggestion of Gregory IX, and at once leapt into prominence by the outspoken way in which he rebuked Henry III for encouraging foreign favourites; the king appealed to Rome for a legate, who at once opposed and thwarted E. at every point. In 1240 he withdrew to Pontigny, and d. at Soissy in 1242. Canonised in 1246, his feast is on 16 Nov.

Edmundston, city in New Brunswick, Canada, at the confluence of the St John and St Francis rivs. It is the H.Q. of the Fraser Companies Ltd. which operate a large pulp mill. The wood pulp is transported by pipeline across the U.S.A. border, then manufactured into paper at a mill owned and operated by the same company in the state of Maine. Pop. 10,753.

Edom (Heb. 'red,' Gk *Idoumaia*), an expanse of country to the S. of Israel some 100 m. long by 30 m. wide, extending

southwards from the Dead Sea to the Gulf of Akabah. Its name is probably derived from the ruddy colour of the sandstone rocks, and has been discovered under an Assyrian form in a tablet of the 2nd cent. bc. It was originally inhabited by the cave-dwelling Horites, but it later came into the possession of Esau, who received the surname of Edom, the derivation of the name being made from the red pottage given him by Jacob (Gen. xxv. 29 ff.). The relations between the Israelites and Edomites were generally hostile, and the O.T. tradition dates the commencement of this hostility from the time when the Edomites refused the Hebrews a passage through their country to the land of Canaan (Num. xx. 14 ff.). Under David and Solomon the Hebrews brought their ancient foes into apparent submission, but there were frequent rebellions. They regained their freedom after the fall of Judah, and waged war without much success with Judas Maccabaeus. They were later completely subdued and converted to Judaism by John Hyrcanus at the end of the 2nd cent. bc. From about 300 bc the E. part had been in the hands of the Nabathaeans. After the Rom. conquest, E., Judea, Samaria, and Galilee were united as a procuratorship under Antipater the Idumean, founder of the Herodian dynasty.

Edoni, Thracian tribe noted for some skill in music, literature, and the working of gold and silver. They were also famous for their orgiastic worship.

Edred (d. 955), king of the Eng. The youngest son of Edward the Elder, he succeeded to the throne in 946. His reign was largely spent in battling for Northumbria, which, having sworn him allegiance in 947, transferred its loyalty to Eric of Norway (Bloodaxe). Eric was killed in battle in 954 and E. then acquired Northumbria.

Edrioasteroids, a small group of Palaeozoic pelmatozoan echinoderms with a flexible sessile skeleton made of numerous irregular plates, and bearing 5 curved food-grooves.

Edrisi, or **Idrisi**, Abu Abdallah Mohammed El- (1099-1170), Arabian geographer, who under the patronage of Roger II of Sicily wrote a description of the 'inhabited earth' from observations, and not merely from books. emissaries were sent into various countries to obtain information which E. inserted in the new geography, entitled *The Rogerian Treatise*. This contained a full description of the world as far as it was known at that time.

Education. The term E. in the widest sense may be held to include the whole process of development through which a human being passes from infancy to maturity, gradually adapting himself to his physical and social environment; but the more definite sense in which the term is ordinarily employed is restricted to those influences which are *designedly* brought to bear upon the younger by the adult portion of the community for the purpose of maintaining and, if possible, of raising the level of culture attained, and it is to this sense of 'schooling' that we

must confine ourselves in this article. In the earliest stage of development of mankind, the training given to the young was of a purely incidental character: manners and customs were at first acquired by a process of imitation rather than by any consciously designed instruction.

As the arts of life, in the civil and military sphere, became more complex, provision was made for them, and with the invention of letters, requiring a special training for the mastery of the symbols, and encouraging the accumulation of knowledge far wider than provided by the immediate environment, schools as formal institutions came into existence. In the *Republic* and *Laws* of Plato will be found a representation of the ideal of E. at Athens and of the importance given to dialectic and music, and to gymnastic exercises for the body. The moral influence of gymnastics, and especially of music, upon the character was a cardinal feature of Plato's educational theory. There was practically no state regulation of schools for boys until they reached the age of 17 years, when they entered the *ephebea*. The younger boys were sent by their parents in charge of slaves to professional teachers, who were of 3 kinds: the *grammatists* who taught reading, writing, and arithmetic; the *citharistes* who taught singing and playing on musical instruments; and the *paedotribes* who trained the boys in wrestling, boxing, running, jumping, etc. During the early period of the Rom. rep. E. was left entirely to the parents. The boy was taught to read, to reverence the gods, and honour the state, and was trained in hardihood of body. With the influence of Gr. culture schools began to spring up under professional teachers who were for the most part Greeks. In these the boy was instructed in the 3 Rs by a master known as *literator*. On attaining the age of 12 or 13 he was sent to another master, *literator*, under whom he studied grammar (including the form and content of literature), poetry, hist., philosophy, and Greek. Schools of rhetoric were also estab., restricting themselves to training in oratory, the value of which is insisted upon by Quintilian and Cicero. In Quintilian's *Institutio Oratoria* we are given a discussion of the whole of E. from the cradle upwards, from which it would appear that the E. given by the *literator* was much as in Eng. grammar schools up to the 18th cent.

With the rise of Christianity schools were instituted for instructing the young in the Christian faith. As Christianity grew the old pagan schools gradually disappeared and their place was taken by schools mainly connected with monasteries, which prepared young men for the monastic life. The chief monasteries generally had, however, external schools for pupils not proposing to enter the order, as well as the internal schools for novices. By degrees the curriculum was widened to include the 7 liberal arts, relics of the old Rom. E., known as the *Trivium*—grammar, logic, and rhetoric (including the study of law)—and the *Quadrivium*—geometry (which corresponded rather

more to physical geography than what is now understood by the term geometry), arithmetic, music, and astronomy. The development of city life and trade guilds led to apprenticeship in the arts of the counting house and the workshop. The desire for E. penetrated even to the lowest classes of the people, and elementary A.B.C. schools came into existence, generally presided over by the par. priest, to give instruction to the children of the poor in reading, writing, and easy arithmetic. The most famous univs. were at Paris—the chief centre for philosophy and theology, which formed the model for the univs. of Oxford and Cambridge; at Salerno, at which the study of medicine took 1st place; and at Bologna, famous for its study of civil and canon law. The need for acquiring a definite status induced most univs. to apply to the Pope or the emperor for recognition, though a few of the greater univs. did not find it necessary to do this. Charters were granted by Henry III to the 2 Eng. univs., Cambridge in 1231 and Oxford in 1248. The Ger. univs. were of later foundation, and were mostly estab. by civic authority: Prague was estab. in 1348, and Vienna in 1365, and obtained charters from the emperor later. Though univs. were intended mainly for more advanced E., the distinction between them and grammar schools was not everywhere clearly marked, and young boys frequently attended.

The Renaissance led to a free and unfettered study of all that appealed to the intellect of man. The movement originating in Italy, which consisted in going back to the ancients and reviving the free study of all classical writers, both Lat. and Greek, assimilating their reasoning, and making a philological study of their language, is termed the *Revival of Learning*. Such literature was styled *litterae humaniores* and those who advocated its study were called *Humanists*. Vittorino da Feltre (1378–1446) was perhaps the most famous of the early It. Humanist schoolmasters. His ideal was the patriotic and well-equipped citizen rather than the self-contained scholar. Classics naturally formed the foundation of the curriculum in the Humanist schools. In addition to their value in stimulating literary taste and culture, they provided a disciplinary training much more than at the present day. The later Humanist theories of E., which the schools continued to follow generally for 2 or 3 centuries, were taken mainly from Erasmus (1467–1536) and Melancthon (1497–1560). To Erasmus Humanism, which in the eyes of the Italians was an end in itself, was only the means to the propagation of truth. Melancthon was a great supporter of the claim of the classics to impart a culture not otherwise attainable, and was also the author of sev. school text-books. The Lat. *gymnasien*, founded at Strasburg by Melancthon's friend Sturm (1507–89), became the model which the grammar schools of Protestant Europe strove to copy. In this school practically the whole of the time was given to acquiring a mastery of the Lat. language. In Eng-

land Humanism did not spread so quickly until it was adopted by the univs., where it encountered less opposition than in Germany. St Paul's School, founded in 1512 by Dean Colet, provided for a distinctively Humanistic E. In Catholic countries the Church retained entire control of E., and the Society of Jesus, founded in 1540 by Ignatius Loyola, estab. many schools which were extremely successful. The curriculum in these Jesuit schools was purely Humanistic, and a particular feature was the attention paid to the individual character of each pupil.

While Lat. was accepted as the medium of learning, and so long as new branches of knowledge were not discovered, the schools remained in harmony with the culture of the day; but during the 17th cent. the difference between the needs of life and the E. furnished by the grammar and other classical schools grew gradually wider, and many schools, owing to the rapidly decreasing numbers in attendance, fell into decay. Indeed, in England many of the old grammar schools degenerated into elementary schools of a very poor and inefficient character, and at the beginning of the 18th cent. organised E. was at a very low level. But there was no lack of educational theorists and writers. Comenius (1592–1671), the author of *The Great Didactic: the whole Art of Teaching all Things to all Men*, 1657, and a number of text-books on original lines, takes 1st place amongst the realists, of whom J. H. Pestalozzi and F. W. A. Froebel were latter-day disciples. The realists maintain that things, not words, must provide the organon of E., and that the child must be brought into contact with the concrete before proceeding to the abstract. John Locke (1632–1704) on the other hand is to be classed among the naturalists who hold that the duty of the teacher is to treat the child as an individual who is being prepared for life by living. He does not, however, appear to concern himself with any but the children of the wealthy, for he declares roundly in favour of a home E., under a private tutor, as opposed to that given in public schools. During the 18th cent. E. became more and more to be looked upon as the property of the select few. In 1762 appeared Jean Jacques Rousseau's famous *Emile*, the underlying motif of which is an appeal for a return to nature. With all its violent paradoxes *Emile* exercised a wonderful influence on E. Rousseau also made a special plea for child-study. At this time Pestalozzi (1746–1827) was a young student at Zürich. Though by method a realist, he drew his inspiration from Rousseau, and this early influence is traceable in his ardent belief that an important factor in E. had hitherto been insufficiently considered—the child himself. Froebel (1782–1852) succeeded in constructing a complete and consistent system for Pestalozzi's scheme. 'The boy,' says Froebel in his *Education of Man* (trans. 1891), 'has not become a boy, nor has the youth become a youth, by reaching a certain age, but only by having lived through childhood, and further on,

through boyhood, true to the requirements of his mind, his feelings, and his body.' The duty of the teacher consists in clearing the way for nature to do her proper work: to stimulate and direct the child's self activity, without in any way interfering with it. To this end he devised his scheme of gifts and occupations. Froebel's ideas as regards young children, though his native land has never given him due recognition, have been largely accepted outside his own country.

Similar conclusions—that given the right conditions, children love work as much as play—were reached by Dottoressa Maria Montessori (q.v.). The child from its very first years is essentially a spontaneous 'absorber' of what he finds in his environment. In her view, consequently, the art of education consists in preparing for the child a special environment which shall contain what we wish him to absorb in forms found experimentally to hold his attention, and establishing a dynamic relationship between the child and this environment.

Many other influences have stimulated the growth of a child-centred E. at the primary stage, with an emphasis on freedom and activity. Among these were the Dalton plan initiated in the U.S.A., and the Decroly system introduced by the Belgian, Ovide Decroly (q.v.), which differs from the Montessori method in that it does not employ experimentally determined apparatus.

One of the great influences, too, in modern E. has been that of Johann Friedrich Herbart (1776–1841). Great importance was attached by Herbartians to what are called the 'five formal steps': the successive stages in every lesson given in what they consider the only right way: (1) preparation; (2) presentation; (3) association; (4) formulation; (5) application.

Another significant influence has been that of Rudolf Steiner, distinguished founder of Anthroposophy. His pioneer school at Stuttgart (founded 1919) has been the inspiration of similar experiments in many countries, including Great Britain. These schools have had particular success in dealing with mental defectives, along original lines in which the arts are therapeutically employed.

The relation between the state and the individual in E. has long been a favourite theme of discussion and controversy. It is now generally recognised that the state has the duty of providing E. for all its children. Even Adam Smith and John Stuart Mill, the apostles of 'natural liberty' and *laissez-faire*, admitted the exception of E. Adam Smith was in favour of state-controlled elementary E., though he hardly disguised his disapproval of state interference in higher E. Mill, on the other hand, advocated that the state should provide for both elementary and higher E., and that elementary E. should be made compulsory. England for long lagged behind most of the other great civilised nations in this respect, and it was not until 1880 that elementary E. was made compulsory, but secondary E. was

left practically untouched by the state until 1902.

The various stages of growth from infancy to maturity require, and have created in most modern civilised states, a graduated system of schools adapted to the needs of each particular period. But, as a brief reference to the educational systems of a number of countries will show, development has been on widely different lines as a result of diverse social, political, religious, and economic circumstances.

GERMANY.—In Germany state intervention in E. began at the time of the Reformation, and towards the end of the 16th cent. 2 states, Saxony and Württemberg, had organised fairly complete educational systems in connection with the Church. The Thirty Years War had a disastrous effect on E., but in the 18th cent. the state system was revived in the 2 states above mentioned, and their example was followed by Hanover and Prussia. As early as 1717 a law was in force in Prussia requiring all children to attend school wherever schools were accessible. In 1806, when Prussia lay at the feet of Napoleon, the control of E. was all that was left to that state by her conqueror, and in response to Fichte's appeal in his *Address to the German Nation*, a thorough system of national E. was founded by von Stein in 1807. In 1850 a law was passed making elementary E. free, and the teaching profession a branch of the civil service. The basis of Ger. elementary E. was the Prussian code of regulations of 1854, as modified by the Falk laws of 1872 and later laws. Attendance was compulsory on all children between the ages of 6 and 14. But until the unifying impact of Nazi policy in and after 1933 there was much diversity in the different states, and in 1945 the autonomy in E. of the states or *Länder* was restored in W. Germany. For a time the 9 *Länder* administered E. independently, with the result that differences in educational practice became so considerable that pupils moving from one *Land* to another were often handicapped. Since 1954, however, there have been specific arrangements for co-operation between the *Länder* and a tendency towards unification. The foundation of the Ger. system is the *Grundschule*, a primary school which by a law of 1920 all children between the ages of 6 and 10 are required to attend. After these first 4 years the pupils, according to their ability and interests, receive their E. either in the *Volksschule* or people's school (about 81 per cent), or the *Mittelschule* (about 4 per cent), or the *Gymnasium* (about 15 per cent). Of the last there are sev. types, including the *Real-Gymnasien* which specialise in mathematics, science, and modern languages, but also teach classics. Since 1919 compulsory part-time continuation schools have been an important feature of the Ger. system, providing courses in agric., industrial, commercial, and domestic subjects. Of the 25 univs. 6 were founded in the 15th and 3 in the 16th cent. A prin. feature of E. in E.

Germany is that all children attend a common school for 8 years. Some continue there for another 4 years to pursue academic studies, the majority leaving at the end of the 8 years to learn a trade and attend a part-time continuation school.

FRANCE.—In France elementary E. was practically non-existent before the revolution, when a strongly centralised system of E. was estab. The minister of national E. exercises effective control of all state schools, transmitting directives through regional administrations located in 17 univ. areas. E. first became compulsory in 1882, and since 1935 the compulsory age-range has been 6-14. Under a decree of 1908 a system of nursery schools (*écoles maternelles*) was introduced for children between 2 and 6, and they are well attended. Of the 84,000 primary schools over 73,000 are state schools, the remainder being private schools, most of which are Catholic. In the state primary schools E. is free, and the teachers are civil servants. After the primary stage there are sev. alternatives: a *lycée* or *collège* (grammar or secondary schools), a technical training course, a continuation course of studies, finishing classes, or pre-apprenticeship classes. In addition to the provision made by the state for the post-primary stage there is a large number of private secondary institutions, of which 90 per cent are religious foundations. There are 17 univs., and a number of specialist institutions (*grandes écoles*) that award diplomas recognised by the state. After the Second World War there was a strong demand for educational reconstruction, and the important Languevin-Wallon commission made some fundamental recommendations which, while they have influenced outlook and method, have yet to be implemented.

In Denmark, Norway, Sweden, Austria, Switzerland, Holland, and Belgium, elementary E. is free and compulsory. Switzerland has an admirably organised system, and the management of the schools is in the hands of each canton. Primary and secondary schools are provided in every dist., and there are also numerous technical schools and sev. univs.

UNITED STATES OF AMERICA.—E. in America is under popular control, and there is very great local freedom. Each state, and many of the large cities, has its own system, and provides its own schools and teachers. Compulsory attendance is in force in most states. The elementary school constitutes the 1st section of the broad highway of Amer. E., and is attended by over 90 per cent of the children. Normally the age of admission is 6: the age of transfer to the secondary stage varies. The tendency in many parts of the country is to make the transfer after about 6 years of elementary schooling, and to follow this with 6 years of secondary E., divided in some areas into 3 years at a junior high school and 3 at a senior high school. The typical Amer. high school is 'comprehensive,' attended by pupils of every grade of ability and offering a great variety of

courses, academic and vocational. E. is free both in the elementary and the high school. E. beyond the secondary stage is provided on a generous scale, its range being as diversified as its quality. Many states have their own tax-supported univs., free to the youth of the state, but the development of univ. E. in America owes much also to the munificence of individual benefactors. Of the many univs. the oldest are Harvard, founded in 1636, and Yale, founded in 1701. While the most popular of the various institutions for higher E. is the 4-year liberal arts college, there is a wide range of technical E. which is constantly expanding to meet the growing needs of industry and commerce.

ENGLAND AND WALES.—The state was slow to intervene in E. in England and Wales, mainly for 2 reasons. One was the predominance of the political philosophy of *laissez-faire*, it being widely held that E. should be left to individual and voluntary effort. The other reason was historical. Before the Reformation the undivided Church had been responsible for E. The Reformation, however, created a new situation, the question of the control of E., especially during and after the Civil war in the 17th cent., becoming a source of bitter sectarian conflict. Throughout the greater part of the 19th cent. the chief promoters of elementary E. were 2 rival voluntary societies, one representative of the estab. Church and the other representing other important Christian bodies. Although by the middle of that century it had become apparent that these societies, even with increasing gov. subsidies, were unequal to the task of providing sufficient schools for the rapidly growing child pop., agreement on a national system of E. was not practicable. There was no hope of active intervention by the state until (1) the *laissez-faire* attitude became less rigid, and (2) statesmen could find a compromise that would reconcile the conflicting religious interests and satisfy those who valued freedom of conscience. The Elementary Education Act of 1870 embodied such a compromise and, although restricted in scope because of the prevailing *laissez-faire* outlook, it provided the foundation on which our comprehensive national system has been gradually built. There have since been 3 major E. Acts—1902, 1918, and 1944—but the ingenious Victorian compromise, though modified and amplified, has survived as the basis of our E. system. Its essential characteristics are: (1) a dual system of voluntary and local authority schools, and (2) respect for the individual beliefs of parents, including the right to withdraw their children from religious observance and teaching.

The 1870 Act created school boards to serve as local authorities for E., but in 1888 there was a fundamental reform of the then chaotic system of local gov. Co. and co. bor. councils were estab. by the Local Government Act of that year, and gradually statesmen irrespective of party came to the conclusion that the new local

authorities ought to be entrusted with the administration of E. In 1889 they were empowered under the Technical Instruction Act of that date to promote technical E., and at last by the Education Act of 1902 the school boards were abolished, and the co. and co. bor. councils were made the local E. authorities for both higher and elementary E. To placate opposition to the abolition of school boards a concession was made to certain urb. areas, which were given autonomous powers in regard to elementary E. Three years earlier the Board of Education Act of 1899 had provided a unified central administration, and before long the progressive partnership between the central and local administrations, which has been such a beneficial feature of Eng. E. in the present century, was firmly estab.

The Education Act, 1918, for which H. A. L. Fisher, as president of the Board of Education, was mainly responsible, provided for a number of valuable reforms. It made the school-leaving age 14, abolishing the system of part-time exemptions, commonly known as 'half-time.' Local authorities were empowered to establish and aid nursery schools, while the most dramatic and controversial of its provisions was one which required the estab. of compulsory part-time day continuation schools for young people between the age of 14 and 18. Unfortunately the financial stringency of the 1920's, notably the policy of retrenchment associated with what was known as the Geddes axe, rendered many of the reforms embodied in the Act abortive, including regretably the day continuation school project. Fisher's prin. achievement, therefore, was not his Act but certain administrative reforms that he initiated. These were designed to foster the partnership between the central and local govs., and associate teachers with that partnership. He set up a committee consisting of 2 panels, one representative of local authorities and the other of the teaching profession, under the chairmanship of Lord Burnham and now known as the Burnham Committee, to serve as a permanent negotiating body in respect of teachers' salary scales. He also instituted the present system of state scholarships to enable talented students to maintain themselves at univ.; and he drastically reformed the arrangements for external examinations of secondary school pupils, setting up a representative secondary schools examinations council to supervise and secure an approximate equivalence of standards.

During the years between the wars advocates of educational reform tended to focus attention on the inadequacy and, indeed, injustice of the system of secondary E. Local E. authorities, encouraged by the Board of Education, had since 1902 been remarkably successful in providing new grammar schools: when they began their task there were not more than 30,000 pupils in grant-aided grammar schools and by 1939 the figure had risen to well over 400,000. But in spite of this achievement the percentage receiving secondary E. was as low as 14, and there

was a growing feeling also that such E. ought to include provision for pupils with a practical bent for whom the more bookish E. of the grammar school is unsuitable. Some authorities estab. central schools for such pupils, and sev. junior technical schools were set up, catering, however, for relatively few, about 3 per cent of the boys and 2 per cent of the girls. In 1926 the consultative committee of the Board of Education, under the chairmanship of Sir Henry Hadow, issued a report under the title *The Education of the Adolescent* (often called the Hadow report). It urged the div. of E. into primary and post-primary stages with 11 as the age of transfer, and had the effect of stimulating the provision of many senior elementary schools, forerunners of the secondary modern school of to-day. In 1938 the consultative committee, then under the chairmanship of Sir Will Spens, issued another constructive report on *Secondary Education with special reference to Grammar Schools and Technical High Schools*; and this Spens report was followed in 1943 by the report of the Norwood committee on *The Curriculum and Examinations in Secondary Schools*. As a result of these reports and of discussions that they prompted, there was a growing consensus of opinion that the primary stage should be followed by a system of universal secondary E. organised so as to cater for the different abilities and aptitudes of pupils. The Education Act of 1944 gave statutory expression to this view, abolished the elementary school, and required local E. authorities to make suitable provision for the secondary E. of all pupils. There has been much discussion and some controversy as to the best way of fulfilling this requirement, and as these figures of all grant-aided secondary schools in England and Wales in 1955 show, various solutions of the problem of organisation have been adopted: grammar 1180, technical 302, modern 3550, bi-lateral (modern-grammar) 57, bi-lateral (modern-technical) 20, bi-lateral (grammar-technical) 16, multilateral 3, comprehensive 16.

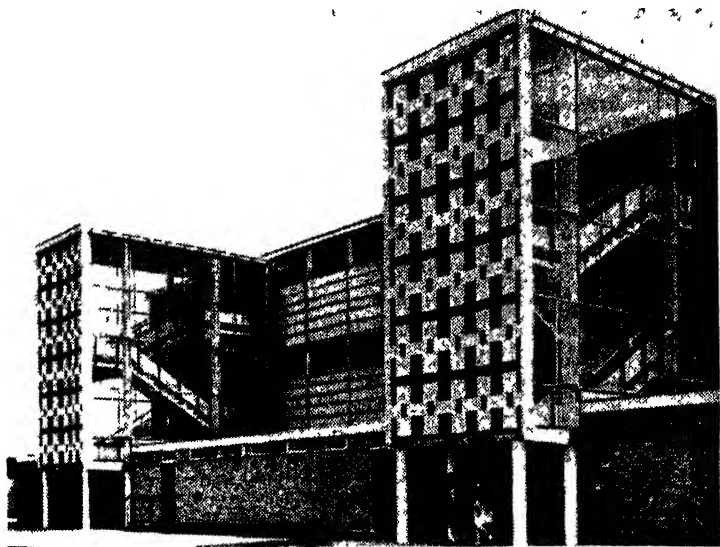
The Education Act of 1944 not only wrought a revolution in our educational and social structure by abolishing the elementary school and introducing universal secondary E., but because of its comprehensive character it also determined the pattern of the whole educational system, adjusting and adapting it to the needs of our time. The following is a brief description of its main characteristics:

The Central Authority.—Under the Education Act, 1902, the central authority was the board of education and its president was the political head. The function of the board was defined as 'the superintendence of matters relating to education in England and Wales.' The 1944 Act replaced the board by a ministry, and the minister was given wide powers of direction and control over the whole field of public E. except the univ., which are independent, receiving grants direct from the Treasury through a univ. grants

committee. Although the minister, subject to Parliament, has substantial powers, administration is decentralised; the minister neither appoints teachers nor does he build schools. Nor in matters affecting the curriculum and teaching method does he do more than issue 'suggestions,' and similarly the gov. inspectors, known as her majesty's inspectors or H.M.I.s, while they inspect schools and give advice, are careful not to encroach upon the freedom of the teacher

tions to divisional executives, and there is a substantial delegation by co. authorities to some of the larger non-co. bors. or urb. councils, their areas being constituted in the phraseology of the Act 'excepted districts.' The L.E.A., as the administrative mainstay of our decentralised system, is responsible for the administration of all stages of E., except that of the univ., throughout its area.

Voluntary Enterprise.—There is a long tradition of voluntary enterprise in E.,



County Architect - C. H. Ashin, C.B.E., P.P.R.I.B.A.

BENNETTS END SECONDARY MODERN SCHOOL, HEMEL HEMPSTEAD, HERTFORDSHIRE

Completed 1956.

in regard to curriculum and method. The ministry has a separate dept for Wales with a permanent secretary and chief inspector.

The Local Education Authority.—The authority for elementary E. only granted by the Act of 1902, referred to above, was abolished by the 1944 Act. The co. and co. bor. councils are, therefore, now the only local E. authorities. There are 146 L.E.A.s (to use the customary abbreviation) in England and Wales—62 cos., 83 co. bors., and 1 joint board for the combined area of a co. and a bor. (the soke of Peterborough and Peterborough). Each of these authorities is required to appoint an education committee, about two-thirds of its members are aldermen or councillors, the remainder being co-opted members chosen because of their experience in E. or special knowledge. Each L.E.A. has to appoint an E. officer, who is assisted by an appropriate staff. In cos. the L.E.A. delegates some func-

and although the state continues to enlarge its frontier the number of voluntary associations and agencies tends to increase. Such associations are particularly active in adult E., the youth service, and in the E. of handicapped children. Some receive gov. grants or are aided by the L.E.A., and there is as a rule close co-operation between local authorities and the voluntary associations engaged in educational work in their area.

Finance.—Except for certain services, such as school meals, subject to special grant arrangements, the grant payable to L.E.A.s by the ministry of education is based on a formula designed to relate the grant to the number of children in the authority's area and its capacity to contribute to the cost of their E. by means of local rates. Calculated as a percentage of the authority's net approved expenditure, the grant is paid under a system which fosters the sense of partnership. In 1955 the total expenditure on E. met from

taxes and rates was £376 million, of which £233 million came from taxation in the form of ministry of education grants. Expenditure on E. is on an increasing scale, the main reasons being the growth of the school pop., the erection and equipment of new schools and technical colleges, instalments of equal pay for women teachers, increases in Burnham salary scales, and the additional cost of goods and services generally. Some services administered by L.E.A.s are grant-aided by gov. depts other than the ministry of education: for example, L.E.A.s which administer the youth employment service do so under regulations of the ministry of labour, receiving grants from that ministry on a 75 per cent basis.

The School System.—E. is regarded as a continuous process, and is divided into 3 stages: *Primary* (up to 11–12 years). For this stage nursery schools (2–5) are provided where deemed necessary; infant schools for children between 5 and 7, the compulsory age beginning at 5; junior schools for pupils from 8 to 12. In less populous areas infants and juniors usually share one school. *Secondary* (11–12 to 18). Attendance is compulsory to the age of 15, but under the Act the compulsory age is eventually to be raised to 16. As indicated above, there are sev. types of secondary school, the aim being to provide pupils with an E. appropriate to their ability and aptitude. Problems of selection and allocation present great difficulty, and since 1914 have been under constant review. *Further Education.* This stage embraces all vocational and non-vocational E. provided for young people who have ceased to attend school full-time, and all forms of E. for adults, including technical E. in the widest sense. The 1944 Act requires the provision of co. colleges, which all young people not receiving full-time E. will attend part-time up to the age of 18, but this important reform has not yet been carried out. In 1955 there were 2,041,000 students in grant-aided establs. for further E., of whom 64,000 were full-time, 402,000 part-time day, and 1,575,000 evening. The increasing demands of industry for technologists and technicians have focussed attention on technical E., and policy is being directed to its expansion and improvement.

The Supply and Education of Teachers.—There are over 240,000 teachers engaged in maintained and assisted schools of all kinds. It is recognised that the worth of the entire educational system depends upon an adequate supply of appropriately qualified teachers. Post-war policy has been much influenced by what is generally known as the McNair report on the supply, recruitment, and training of teachers and youth leaders, issued in 1944. There are 176 institutions engaged in preparing teachers for their vocation—23 univ. or univ. college depts of E., 113 non-specialist training colleges, 14 training colleges for domestic subjects, 7 training colleges for physical E., 3 training colleges for teachers of

technical subjects, and 16 art colleges with depts for teacher E.

Universities.—Until the 2nd quarter of the 19th cent. England had only 2 univs., the famous medieval foundations at Oxford and Cambridge. To-day there are 15 univs. in England—Birmingham, Bristol, Cambridge, Durham, Exeter, Hull, Leeds, Liverpool, London, Manchester, Nottingham, Oxford, Reading, Sheffield, and Southampton—and 2 univ. colleges, Leicester and North Staffordshire. The univ. of Wales has its constituent colleges at Bangor, Cardiff, Aberystwyth, and Swansea. Since the last war there has been a substantial increase in the number of students, from 50,000 pre-war to over 80,000. The expansion is likely to continue. For by 1960 the higher birth-rate of the war and immediate post-war years, which has been the cause of so many strains and stresses in the staffing and accommodation of schools, will be making its impact on univs. and technical colleges and causing still further expansion. More and more univ. students receive assistance from public funds, the proportion of assisted students now being about 75 per cent. The univs., too, increasingly rely on grants from the gov. through the university grants committee, about two-thirds of their income being derived from public sources. Arts, broadly defined, is still the most popular group of studies, but there is a marked increase in the proportion of students pursuing scientific and technological studies.

Handicapped Children.—Although much had been done for handicapped children before the last war and there were many special schools, residential and day, for children requiring exceptional educational treatment, it is generally agreed that the 1944 Act has brought about a welcome change of outlook in this small but important field of E. Previously children suffering from disability of mind or body had been dealt with as a separate group; under the 1944 Act they come within the provisions relating to primary and secondary E., and are regarded like other children as requiring an E. appropriate to age, aptitude, and ability. There have been great advances in the treatment of educationally sub-normal children both in the ordinary school and in special schools; 142 schools for children of this category have been opened since the Second World War. Since the passing of the 1944 Act the number of special schools of all types has increased from 528 to 743, and the number of pupils specially provided for from 38,500 to 58,000. In 1955 there were, in addition to 120 hospital schools, special schools as follows: blind 22, partially sighted 27, blind and partially sighted 3, deaf 14, partially deaf 4, deaf and partially deaf 31, physically handicapped 73, delicate 101, delicate and physically handicapped 45, delicate and maladjusted 3, educationally sub-normal 256, epileptic 8, maladjusted 35, speech defect 1.

The Dual System.—There are over 28,000 primary and secondary schools in

England and Wales, of which in 1955 18,035 were co. (i.e. local authority) schools and 10,773 voluntary. Under the 1944 Act the voluntary schools are of 3 kinds: aided, special agreement, and controlled. In an aided school the representatives of the Church or trust concerned constitute a majority of the governors (or managers). The governors (or managers) appoint the teachers, decide the character of the religious teaching, and meet half the cost of structural improvements and external repairs. Special agreement schools are a small category of schools in respect of which local authorities made building grants as a consequence of an Education Act of 1936. For them the conditions of management are similar to those for aided schools. In a controlled school the local authority representatives are in a majority on the governing body, denominational teaching may be given on not more than 2 periods a week, and otherwise religious teaching must be in accordance with an 'agreed syllabus.' Subject to the reservation of certain rights to the managers or governors, the L.E.A. is responsible for the appointment of teachers, and the L.E.A. bears the whole cost of structural improvements and repairs. Of the 10,773 voluntary schools, in 1955 5472 were aided, 4628 controlled, 55 special agreement, and 618 had yet to have their status determined.

The 1944 Act stipulates that in all co. and voluntary schools, both primary and secondary, the day shall begin with a corporate act of worship and that religious teaching shall be given. Children whose parents desire their withdrawal from religious periods are excused attendance at them. In all co. schools and, as indicated above, partly in all voluntary controlled schools, religious teaching must be in accordance with an 'agreed syllabus.' This is a syllabus drawn up or adopted for each area by a conference convened by the L.E.A. and consisting of biblical scholars, teachers, and representatives of the authority.

Schools outside the state system.—The law does not require a parent to send his child to school; it imposes on him an obligation to see that his child, if within the compulsory age-range, is receiving an appropriate E. Rather less than 10 per cent of parents choose not to make use of the state system, and of these nearly all send their children to independent schools. There is a great variety of such schools, some providing E. of the highest quality, while at the other extreme are schools that hardly deserve the name. As regards the latter there has for long been a widespread opinion that parents and children should be afforded some protection. The 1944 Act, therefore, made provision for the inspection of independent schools and the maintenance of a register of all which satisfied requirements. It also forbids the keeping of an unregistered school. It took some time to have all these schools inspected, and the section of the Act relating to independent schools did not come into force until Sept. 1957.

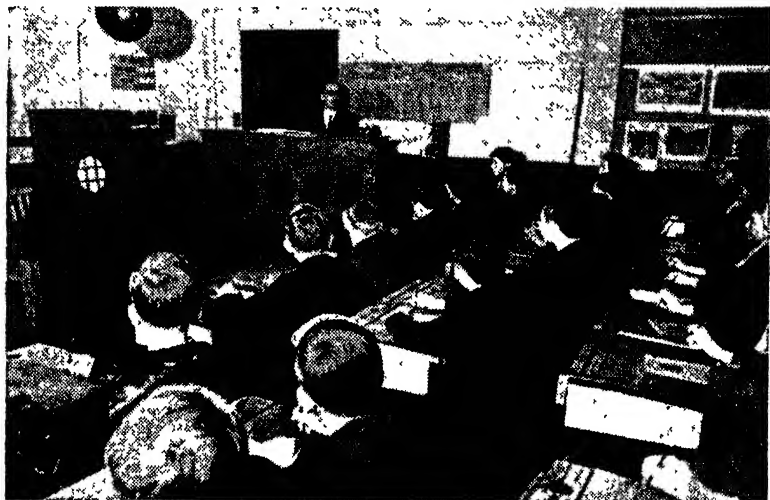
A committee was set up under the

chairmanship of Lord Fleming to consider how the public schools, among which are some famous schools, can be associated with the general educational system. Its report was issued in 1944, and it made a number of recommendations designed to enable a gradually increasing proportion of children from primary schools to be admitted to these independent boarding schools without cost to their parents or at reduced fees. A number of L.E.A.s have subsequently assisted children along the lines suggested by the Fleming committee, but the proportion of children so admitted has not been substantial, nor does it show any tendency to increase. The Fleming committee also made recommendations in regard to a small group of grammar schools, generally known as direct grant schools. They include some endowed schools of ancient foundation and some well-known girls' schools founded in the last century as part of the movement for the higher E. of women. The Fleming proposals for associating these schools with the general system were in the main adopted. There were in 1956 164 of these schools, receiving grants not from the L.E.A. but direct from the ministry. Usually about half their pupils are fee-paying, and the other half attend free, the majority of them being paid for by local authorities.

IRELAND.—In Ireland state intervention in E. began with the foundation of schools by the Elizabethan gov. in pursuance of their anglicising policy. Until 1802 there was a great lack of local effort in E., but in that year the Catholic Society of the Christian Brothers was instituted, which continues its great educational efforts. In 1811 also was founded the Kildare Place Society, which attempted to provide schools upon a compromise between the Catholic and Protestant religions. Both societies received grants from the Treasury in aid of E. until 1833, when a national system of elementary schools was estab. under a board of commissioners, among whose powers were those of aiding in the erection of schools, appointing inspectors, and awarding grants to teachers, of providing a training college, and of issuing text-books. In 1861 special provision was made that the membership of the board should be equally divided amongst Catholics and Protestants. The schools are now almost entirely denominational, either Catholic or Protestant. In the Rep. of Ireland primary E. is directed by the state. Secondary E. is in private hands, and is for the most part conducted by religious orders. School attendance is compulsory for children from 6 to 14 years. State grants to Irish univ. institutions were transferred from the Treasury to the Irish state govts. (Free State and N. Irish) as from April 1922. There are 2 univs., Trinity College, Dublin, and the National Univ. with constituent colleges in Dublin, Galway, and Cork. Northern Ireland became a self-governing unit in 1920, and 3 years later its legislature passed its 1st E. Act. This made each co. and co. bor. council the

L.E.A. for its area, assigning to them duties and powers in respect of almost every educational service except that of the univ. In 1947 an Act was passed which, following the Eng. pattern, required the organisation of E. in 3 successive stages and imposed duties on the L.E.A.s similar to those prescribed in the Eng. Act of 1944. It also provided for a system of secondary intermediate schools so as to make possible secondary E. for all. Northern Ireland has 1 univ., the Queen's Univ. of Belfast, and there

property and control of the existing schools, burgh and par., were transferred to them. Compulsory attendance for all children from 5 to 13 was enforced. The Act also distinguished 3 types of school, the elementary school, the higher grade school, and the higher class school, all of which had primary depts. Powers were also given to school boards to provide meals and medical attendance, defray cost of conveyance in outlying parts, etc., and the Act enabled them to make bye-laws requiring attendance at continuation



BROADCASTS FOR SCHOOLS: A RADIO MUSIC LESSON

B.B.C.

The boys co-operate with the broadcaster, tapping out the beats with pencils at his instruction.

is also the Magee Univ. College in Londonderry.

SCOTLAND.—E. has always received marked attention in Scotland. Even as early as 1494 freeholders were required by a statute of King James IV to send their heirs to school to acquire 'perfect Latin.' In 1560 the Church Assembly decreed, under the influence of John Knox, that every church in 'any town of repute' should have attached to it a Lat. school, and in every par. of country dists. there should be a teacher of 'first rudiments.' In large tns, moreover, there was to be a college for 'logic, rhetoric, and the tongues.' In 1696 par. schools in connection with the Estab. Church of Scotland were set up by parl. statute, and a tax was levied upon landowners for their support. The burgh schools or academies were also estab. in most tns, and came under the authorities. In 1872 the Scottish Education Act made the provision of school boards universal and the

classes up to 17 years of age. In 1885 the Scottish and Eng. E. Depts were separated, and the former has since had its own committee and secretary. In 1888 a state system of leaving certificates was introduced into the higher class schools, and was soon extended to all schools doing higher work. In 1901 the school leaving age was raised to 14 for all children. The Education (Scotland) Act, 1918, made some revolutionary changes. It replaced the school boards by 33 co. and burgh E. committees, and transferred the voluntary schools to these E. authorities, subject to conditions that preserve their denominational character. In 1929 the Local Government (Scotland) Act abolished these *ad hoc* E. committees, and entrusted the administration of E. to the co. councils and the tn councils of Aberdeen, Dundee, Glasgow, and Edinburgh. Although since the Act of Union in 1707 England and Scotland have shared one Parliament, Scotland's educational

tradition is separate and distinct, and the secretary of state for Scotland is responsible for the central administration of Scottish E. Unlike England, Scotland has no dual system, and since 1939 all its primary and secondary schools have been administered under one code. Its post-war statute, the Education (Scotland) Act of 1945, is, therefore, a much less complicated measure than its Eng. counterpart of 1944, and contains few innovations. The 4 Scottish univs. are all anct

the Amer. companies for nearly 100,000 schools. In 1949 the Brit. Broadcasting Corporation began experiments in teaching by television. Daily transmissions were begun by the B.B.C. in the autumn, and by I.T.A. in the summer, of 1951.

Bibliography.—THE CLASSICAL TREATISES: Plato's *Republic* and *Laws*; Quintilian's *Institute*; Elyot's *Governour*; the Jesuits' *Ratio Studiorum*; R. Ascham, *The Scholemaster*; J. J. Rousseau, *Emile*, or *Education* H. Spencer, *Education*;



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TELEVISION FOR SCHOOLS

The headmaster and the class of a London secondary school watch a Schools Broadcast programme.

foundations St Andrews (1411), Glasgow (1451), Aberdeen (1494), and Edinburgh (1583). See also ADULT EDUCATION, CO-EDUCATION, COMMERCIAL EDUCATION; DEGREES; TECHNICAL EDUCATION, UNIVERSITIES, and the references under SCHOOLS.

BROADCASTING TO SCHOOLS.—Among the specialised programme services provided by broadcasting, the most important are perhaps the broadcasts to schools. In Great Britain the value of educational broadcasting was estab. as early as 1927, when a year's experiment was conducted among the schools in Kent. Twenty years later over 12,000 schools were registered as listening regularly to the Brit. Broadcasting Corporation's schools broadcasts. In the U.S.A. E. by radio has also achieved a prominent position, educational broadcasts being provided by

J. Locke, *Some Thoughts concerning Education*, F Froebel, *The Education of Man*, J. Herbart, *The Application of Psychology to the Science of Education* (trans.). HISTORY AND GENERAL THEORY: J. Adams, *The Evolution of Educational Theory*, 1912; B. Russell, *On Education*, 1926; A. N. Whitehead, *The Aims of Education, and Other Essays*, 1929; C. Norwood, *The English Tradition of Education*, 1930; J. Dewey, *The School and Society*, 1932; T. P. Nunn, *Education: Its Data and First Principles*, 1945; S. Isaac, *Intellectual Growth in Young Children*, 1945; H. C. Barnard, *A Short History of English Education*, 1947; S. J. Curtis, *Education in Britain since 1900*, 1952; A. D. C. Peterson, *A Hundred Years of Education*, 1952. UNIVERSITIES: J. H. Newman, *Idea of a University*, 1873; B. Truscot, *Redbrick University*, 1943.

Education, Agricultural. See AGRICULTURE.—*Organisation of Agricultural Education in Britain*; AGRICULTURAL RESEARCH.

Education, Ministry of, a term widely used for that dept of the central gov. in which is vested ultimate responsibility for implementing public laws on E. Its degree of authority varies from country to country. In some cases it exercises direct control of the whole system, in others responsibility is shared with regional or local authorities. The M. of E. in Britain was estab. by the Education Act, 1944, to take over the duties previously performed by the Board of Education (1899-1944). Under a minister appointed by the sovereign on the advice of the prime minister its duty is to assist him 'to promote the education of the people of England and Wales' by gathering information and advice as a basis of policy and then putting the policy into effect when the necessary legislation has been passed. This function is exercised in co-operation with local educational authorities who are, according to the act, to 'contribute towards the spiritual, moral, mental, and physical development of the community by securing that efficient education throughout' the primary, secondary, and further stages 'shall be available to meet the needs of the population of their area.' The minister, who is of cabinet rank and receives a salary appropriate to it, is assisted by a parl. secretary, a secretariat of permanent officials, and H.M. Inspectorate of Schools. Through them, and the payment of money grants, contact with and control of the local education authorities and schools are maintained. The role of the inspectors is advisory, but in addition 2 central advisory councils are appointed by the minister to advise him upon such 'matters connected with educational theory and practice as they think fit, and upon any questions referred to them by him.' The Education (Scotland) Act applied to Scotland the gov.'s policy on education. Within this framework it is administered by the Scottish Education Dept. The Education Act (Northern Ireland), 1947, lays down the statutory system under the M. of E. in Belfast.

In general the act increased the power of the central authority. The M. of E. prescribes standards of school buildings and local education authorities have to submit their plans to the ministry for approval. The M. of E. also has the duty of making adequate arrangements for the provision of teachers. Independent schools are subject to registration and inspection. It is also the duty of the minister to 'cause inspections to be made of every educational establishment at such intervals as appear to him to be appropriate.' See EDUCATION.

Education, Technical, see TECHNICAL EDUCATION.

Education, University, see UNIVERSITIES.
Edward I (1239-1307), king of England, eldest son of Henry III, b. Westminster. He was married in 1254 to Eleanor of Castile, and on the occasion of his mar-

riage was invested with the baronies of Gascony, Ireland, and Wales. During the baronial troubles of his father's reign, it seemed at first that E. might side with de Montfort (q.v.), but from 1259 his loyalty to the king was unswerving. He soon distinguished himself as a soldier, and took a prominent part in the Baronial Wars. He was blamed for the overthrow of the royalist forces at Lewes, since, by his wild charge which swept the Londoners from the field, he so weakened the royalist forces that on his return from the pursuit he found his father's forces had been defeated, and surrendered. He escaped from prison in 1265, and defeated Simon de Montfort at the battle of Evesham (1265). From c. 1260 E.'s influence over his father increased steadily. In 1270 he set out on a crusade, and, returning to Europe in 1272, learnt of his father's death. Conditions in England were so stable at the end of Henry's reign that E. had been recognised as his successor, although absent from the country, without question. He was crowned in 1274, having spent the 2 intervening years in settling affairs in France.

His reign is important in sev. ways. E. worked to unify the outlying parts of his kingdom. After the 2nd Welsh war, which ended in the overthrow and death of the last Llewellyn (1282), he was able to annex Wales. The Statute of Rhuddlan made Wales an Eng. possession. Between 1284 and 1290 much new legislation was initiated. E. was determined to be king not only in name but in reality, and all his legislation tended towards that end. His chief measures in this direction were: the abolition of the office of Justiciar, leading to the organisation of the 3 common law courts, the Assize of Winchester (a nation in arms at the disposal of the king), the Statute of Mortmain, and *Quia Emptores* (a means of preventing subfeudation). But E.'s greatest ambition was to bring Scotland under his control. In 1286 Alexander III had d., leaving as his heir the Maid of Norway, his granddaughter, who was only 6 years of age. In pursuance of his ideal of a Scotland united with England, E. planned a marriage between the Maid and his son, Edward of Caernarvon. The marriage was accepted in Scotland, but in 1290 the Maid d. and Scottish affairs became chaotic. E., as arbitrator, at Nottingham chose John Balliol as king of Scotland, out of a dozen claimants, the most prominent of whom was Robert Bruce. Balliol did homage to E. as his over-lord, but the Scottish people, resenting keenly the attitude of E., forced Balliol into open rebellion, and E. invaded Scotland. By the end of 1296 he had reduced Scotland, and at Brechin had forced Balliol to surrender the crown. He appointed his own regents for Scotland and departed southward, taking with him the famous Stone of Destiny. In 1297 Scotland, led by Wallace (q.v.), was again in rebellion. N. England was harried, and at Stirling Surrey and Cressingham were totally defeated. E. hurried back, and in 1298 overthrew Wallace at Falkirk.

Between 1298 and 1306 it seemed that E. was master of Scotland. In 1305 Wallace was captured and executed, but in the following year Bruce murdered Comyn, and seized the crown of Scotland. E. hurried northward, but he was falling fast in health, and in July 1307 he *d.* at Burgh-on-Sands. On his tomb is inscribed *Edwardus Primus Malleus Scotorum hic est*. He may be best described as a man of stern character, jealous of his honour and of what he conceived to be the honour of his kingdom, true to his word when it suited his end, and only then. When it was necessary E. did not hesitate to break his pledged oath, and his conduct towards the Welsh and Scots was marked by cunning, duplicity, and ruthlessness. When he *d.* the prestige of his kingdom was high and its boundaries much extended; but his wars led to heavy taxation and though his success in Wales was lasting his Scottish policy was, in the last resort, indecisive. His 'Model Parliament' of 1295 in which the 3 estates of the realm were represented is perhaps his most lasting claim to fame. His first wife *d.* 1290 and in 1299 E. married the sister of the king of France. See life by T. F. Tout, 1893.

Edward II (1284-1327), king of England, b. Caernarvon, the first of the Eng. crown princes to bear the title of Prince of Wales. He succeeded his father in July 1307, and disobeyed his last command to continue the war with Scotland. He married Isabella of France, 1308. Weak, effeminate and incapable, his reign is one long record of struggle with the barons. His favouritism towards Piers Gaveston was unpopular, and the honours showered upon the favourite were to cost Gaveston his life. The barons, forming a committee (1310), drew up the Ordinances which E. was forced to accept (1311). For some years E. was little more than a nominal ruler, his defeat at Bannockburn (see below) giving the Lancastrian party the opportunity to seize power more firmly; but after Lancaster's death (1322) E. regained control of affairs, ruling as incompetently and extravagantly as before. In 1326 Isabella, who had gone to France with her son (Edward), returned, landed at Orwell, and marched against the king. The Despencers, the favourites of the moment, were captured and executed, and the king was deposed. In 1327 he was brutally murdered in Berkeley Castle. Outside England, E. had shown his weakness in the total defeat of the Eng. Army at Bannockburn in 1314, a victory which was followed up by the capture of Berwick, and resulted in the practical independence of Scotland. See T. F. Tout, *The Place of the Reign of Edward II in English History*, 1914.

Edward III (1312-77), king of England, son of Edward II, crowned in 1327. In 1328 he married Philippa of Hainault. During the early years of his reign Isabella and Mortimer retained the real power, until in 1330 he banished his mother and executed Mortimer. He then made peace with France in order to turn his attention to Scotland, where in the

early years of his reign (1330-6) he fought 3 campaigns, in which he defeated the Scots (notably at Halidon Hill on 19 July 1333) and forced Edward Balliol to do homage to him. After each campaign, however, the Scots rallied, and E.'s attacks on Scotland were stopped by the outbreak of war with France. His formal claim to the throne of France in right of his mother was largely an excuse to start a war which E. and the nobility both wanted. It was in part a commercial war, fought by E. because he desired to retain the Flem. woollen trade, but probably his basic desires were to increase his territorial power and national and international prestige, and to gain personal glory. It was the zenith of the age of chivalry with all its elaborate ceremonial and formal courtesies, and after the ineffectuality of Edward II's reign both king and nobles fretted to display their personal powers in the field and to reap large spoils from the traditional enemy, France, whose weakness was an invitation for invasion. The war opened with the battle of Sluys (1340), a naval victory for England. In 1346 was fought the battle of Crécy (q.v.), which resulted in the overthrow of the Fr. Army, and the vindication of the tactics of the Eng. archers. In the following year Calais fell into the hands of the Eng., and in the previous year the battle of Neville's Cross had delivered David, king of Scotland, a prisoner to the Eng. queen. The Black Death in England in 1349 put an end to the war for some time, and resulted also in the changing of the labour market in England. The relationship between the lords of the manor and the inhab. changed, and although the Statute of Labourers purported to fix wages, its provisions were found to be unworkable. In 1355 war was renewed, and Edward the Black Prince won a great victory at Poitiers. The Fr. king, John, became a prisoner and was taken to England. In 1360 the treaty of Bretigny was signed, and E. gave up his pretensions to the Fr. throne and received Aquitaine, Poitou, and the tn of Calais as a sovereign prince. The Scottish king had been released in 1357 on the payment of ransom, and the Fr. king in 1360. The latter, however, finding it impossible to raise the ransom, returned to England, and *d.* there a prisoner in 1364. War again broke out in 1369, and dragged on unsuccessfully until 1377, when E. *d.* His son, the Black Prince, had predeceased him. The latter years of his reign had been years of decadence, and most of the troubles of Richard II (q.v.) have their origin in his grandfather's actions—or inaction. E. had fallen under the influence of Alice Perrers, his mistress, and power had passed largely into the hands of John, duke of Gloucester, and his brothers. But the earlier years of the reign had been distinguished by great commercial expansion; while the statute of *Præmunire* (1353) marked a further step forward in the efforts of the sovereign to establish the supreme jurisdiction of his courts (directed, on this occasion, against papal

interference). E.'s reign is important also in the hist. of constitutional progress. Although the enthusiasm aroused by the Fr. war sometimes enabled the king to levy illegal taxes, his parliament succeeded in placing important restrictions on the royal power, as, e.g., when the king declared in 1352 that the levy of tallage should cease, and again when the prerogative of purveyance (see *PRE-EMPTION*) was abolished in 1362 except for the personal needs of the king and queen. Parliament also asserted its control over customs such as tunnage and poundage by the statutes of 1362 and 1371, which enacted that neither merchants nor any other body should impose a subsidy or charge on wool without parl. consent. In judicial matters, 2 important privileges were successfully asserted: the Commons asserted their right to impeach the ministers of the crown (1376), and the Lords confirmed their right to trial by their peers alone. See also *HUNDRED YEARS WAR*. See lives by W. Longman, 1869; and J. Mackinnon, 1900; and H. Pirenne, *Histoire de l'Europe*, 1936; and A. H. Burne, *The Crécy War*, 1955.

Edward IV (1442-83), king of England, son of Richard, duke of York, and Cicely Neville, b. Rouen. He was in the Welsh Marches when he heard of his father's overthrow and death at Wakefield (1460). E. immediately took over his father's position as Yorkist leader, and, acting swiftly and decisively, marched on London. On the way he won the battle of Mortimer's Cross, and entered the cap. in Mar. 1461. He was proclaimed king, and immediately marched N. again. At Towton his decisive victory consolidated his hold on the crown. But he owed much of his success to his Neville relations and especially to Warwick (q.v.). From 1461 to 1464 Warwick was the real ruler of England. After E.'s marriage to Elizabeth Woodville, however, Warwick's influence declined. In 1469 Warwick and Clarence, E.'s brother, rebelled. Warwick joined forces with Margaret of Anjou, and E. had to flee to Burgundy, whose duke had married E.'s sister, Margaret (q.v.), in 1468. With Burgundian help E. returned to England, defeating Warwick at Barnet and Margaret at Tewkesbury (1471). Warwick was killed in battle; Henry VI was put to death shortly after Tewkesbury, and Clarence was imprisoned and murdered, 1478. Henry's son had been killed after Tewkesbury. The remainder of E.'s reign was fairly peaceful, with the exception of a short war with France (1475), and an only partially successful campaign against Scotland (1482).

In an emergency E. could act energetically and with resolution; but his very real abilities were increasingly hidden by his natural indolence, and his court became notorious for its wantonness and luxury. In many ways he was a typical Renaissance prince, opportunist, politically unscrupulous, capable of extreme ruthlessness and barbarity, but a cultured patron of learning (he was a patron of Caxton), and of the new discoveries. Strengthened by the wealth he had

obtained from confiscations, and by the fact that any potential remaining enemies among the nobility were temporarily too weakened by the recent struggles to be immediately dangerous, E. gave his kingdom a short period of stable gov. such as it had not had for sev. decades. He is sometimes regarded as a fore-runner of the Tudor autocrats. See life by C. L. Schofield, 1923.

Edward V (1470-83), king of England, elder son of Edward IV and Elizabeth Woodville. He succeeded his father in April 1483, his uncle, Richard of Gloucester, acting as regent. In a little over 3 months Richard had imprisoned E. and his younger brother in the Tower and had them declared illegitimate, and had seized the crown himself as Richard III (q.v.). When it was given out that the young princes had d., popular suspicion immediately fastened on Richard as having ordered their deaths. Their murder in 1483 has been fairly conclusively estab. but the instigator of the crime has never been proved. Richard remains the most probable suspect; he had an overwhelming interest in the disposal of his nephews, and the power to command it; he made no attempt to refute contemporary allegations. P. M. Kendall's *Life of Richard III*, 1956, suggests that Buckingham may have been responsible.

Edward VI (1537-53), king of England, only legitimate son of Henry VIII, and the only child of Henry by his 3rd wife, Jane Seymour, who d. shortly after his birth. He was delicate from birth, but appears to have been unusually intelligent and precocious. E. was never created prince of Wales, but bore the title duke of Cornwall from his birth. He succeeded his father when not quite 10 years of age, and the gov. was carried out in his name by regents, first the duke of Somerset, and second by the duke of Northumberland. E. was practically a nonentity during his short reign, the famous acts assigned to him being the work of the regents. From the time of his father's death he was brought up as a Protestant, and gave promise of becoming a fanatic. He left a will when he d. which was obviously the work of Northumberland. By it he set aside the will of his father and left the throne to Lady Jane Grey (q.v.) and her heirs male, Lady Jane having recently been married to the eldest son of Northumberland. E.'s reign marks a turning point in the religious hist. of England. During it prominent Eng. Protestant refugees were able to return to the country, and influential continental Protestants freely admitted to England. Protestant doctrines penetrated every strata of society; vandalism of Church property was widespread. Protestantism gained a popular hold strong enough to make Mary I's dream of a quick, complete and relatively bloodless return to Catholicism impossible of fulfillment. See life by Sir C. H. Markham, 1907, and J. C. Nichols (ed.), *The Literary Remains of King Edward VI* (including diary 1549-52), 1857. See also C. H. Smyth, *Cranmer and the Reformation under Edward VI*, 1926.

Edward VII (1841-1910). Albert Edward, king of Great Britain and Ireland and of the Brit. dominions beyond the seas, emperor of India, was the eldest son and 2nd child of Queen Victoria and Prince Albert, and was born at Buckingham Palace. In the Dec. following he was created earl of Chester and prince of Wales. He was educ. under private tutors, and in 1859 went to the univ. of Edinburgh. From here he went first to Christ Church, Oxford, and later to Trinity College, Cambridge. In 1858 he had been made a knight of the Garter, and a colonel in the army. In the following year he visited Italy and Spain, and in the following year travelled through Canada and the U.S.A. In 1862 he paid a visit to the Holy Land. He had already impressed the people whom he had met with his charm, but his early life was passed under many restrictions, which did not lessen in severity after the death of his father. In 1863 E. was admitted a member of the privy council and took his seat in the Lords as duke of Cornwall. On 10 Mar., in the same year, he married Princess Alexandra of Denmark. He was granted an income of £40,000 a year in addition to the revenue of the Duchy of Cornwall, and Sandringham was purchased for him, whilst Marlborough House became his residence. His eldest son, Prince Albert Victor (duke of Clarence), was born 1864, Prince George Frederick Ernest Albert (George V), 1865, Princess Louise Victoria, 1867, Princess Victoria, 1868, Princess Maud (queen of Norway), 1869.

After his marriage the prince of Wales played an important part in the social life of the nation. The death of the prince consort had been an overwhelming blow to the queen, and for many years following it she lived in practical retirement. Though she allowed her son to represent her at a number of lesser functions, it was not until near the end of her life that she allowed him to take a major part in state affairs: and this no doubt at least partially accounted for his excessive preoccupation with social events, such as horse-racing, the theatre, etc. The prince, however, was always ready to help forward charitable movements, and he played an important part in the linking together of the empire by his various foreign tours and visits. He had already visited France. Amongst his more important visits may be mentioned Egypt, 1869; Ireland, 1871; Russia, 1874; India, 1875; Ireland, 1885. In 1871 he was struck down with typhoid fever, and for a time his life was in danger, but he finally recovered completely. In 1892 his eldest son, Prince Albert Victor, on the eve of his marriage to the Princess May Victoria of Teck, *d.* after a very brief illness. In the following year his son, Prince George, married the same Princess May Victoria of Teck, to whom a son, Prince Edward of Wales, was *b.* in 1894. In 1897 the prince of Wales took a leading part in the arrangements and the actual events of the queen's diamond jubilee.

Early in 1901 his mother, Queen

Victoria, *d.*, and the prince succeeded with the title of Edward VII. In May 1902 the war in South Africa was brought to an end. The personal popularity of the king was seen from the very beginning of his reign, and he proved a more able ruler than many had expected, though his activities were increasingly curtailed by ill-health. He took an active part in the political and social life of his people. He was thoroughly constitutional, but did much by a revival of court pageantry to restore the personal glamour of the crown, which had tended to lapse during Victoria's long widowhood, and his influence on foreign policy, especially in Anglo-Fr. relations, did much to further the cause of peace. The early part of his reign was clouded by his illness just before his coronation, but he recovered and was crowned on 19 Aug. 1902. Early in 1910 the king was taken ill, but recovered, but again on 5 May he was reported to be suffering from bronchitis, and on the following day he *d.* of heart failure. In spite of his lack of political training, and some marked personal faults which he himself did not try to conceal, E. speedily won for himself the affections of his people. It is possible that his personal influence on affairs of state was exaggerated by his contemporaries; but to the mass of his subjects he was for many years remembered as Edward the Peacemaker. See lives by Sir Sidney Lee (the official life), 1925-7; E. F. Benson, 1934; A. Maurois, 1936; C. Gavin, 1941. See also Virginia Cowles, *Edward VII and His Circle*, 1956.

Edward VIII (Edward Albert Christian George Andrew Patrick David) (1894-), king of Great Britain, Ireland, etc., from 20 Jan. to 10 Dec. 1936, the eldest son of the duke and duchess of York (afterwards George V and Queen Mary), *b.* 23 June at White Lodge, Richmond Park. He was created prince of Wales on his 17th birthday, and before attaining his majority, in 1912, he had completed his naval education at Osborne and Dartmouth, being gazetted midshipman in 1911 on the *Hindustan*, where he earned a reputation for hard work. He went into residence as a commoner at Magdalen College, Oxford, in Oct. 1912. During the First World War E. was attached to the staff of Sir John French (later earl of Ypres) on the W. Front in 1914; he was appointed staff capt. with the Mediterranean Expeditionary Force in 1916, and became D.A.Q.M.G. in the same year. In 1917 he paid a visit to the It. front. After the war he made a series of tours abroad. He visited Canada and the U.S.A. in 1919, being enthusiastically welcomed in both countries. He visited Australia, 1920, India, 1921, Africa, 1925, and Canada again in 1923, and South America in 1925 and 1931. His charm, sympathy and informality made him very popular; and during the depression of the 1930's his sympathy with the problems of the unemployed increased his popularity. One of the main events of his short reign was a visit to the distressed areas of South Wales. He succeeded to the throne on

his father's death, but abdicated uncrowned, because of constitutional objections to his proposed marriage to Mrs. Ernest Simpson (*née* Bessie Wallis Warfield and now duchess of Windsor), an Amer. citizen whose 2 previous marriages had been dissolved. He left England immediately afterwards and married her at the Château de Condé, France, on 3 June 1937. After his abdication he was created duke of Windsor. During the Second World War he became governor of the Bahamas, retaining this post until 1947. Apart from a number of private visits to Britain, E. has visited the country to attend the funerals of his mother, Queen Mary, and brother, George VI, but now lives in France. Both he and his wife have pub. their memoirs which deal in detail with the events of the abdication. *See also* H. Bolitho, *King Edward VIII*, 1937; and F. Owen and R. J. Thomson, *His Was the Kingdom*, 1937.

Edward, the Black Prince, *see* BLACK PRINCE.

Edward, Lake (formerly Albert Edward Nyanza), lake partly in Belgian Congo and partly in Uganda. L. E. covers 830 sq. m.; mean depth 365 ft. Fish abound, and the lake is said to be free from crocodiles. L. E. is one of the Nile's W. reservoirs. It was discovered by Stanley in 1889, when he succeeded in tracing the Semliki—the one and only outlet of the lake—to its source; and by him was named Albert E. after the prince of Wales, who became E. VII.

Edward Medal, an award for acts of heroism performed by miners and quarrymen or to those who rescue them when in danger; estab. in 1907 by King Edward VII.

Edward the Confessor (c. 1004–66), king of the Eng., the 2nd son of Ethelred 'the Unready' and Emma of Normandy. His surname was given on account of his saintly reputation. The greater part of his early life was spent in exile, since, on the death of his father, the throne of England passed into the hands of a Dan. dynasty. His mother had married Canute (Cnut) after the death of Ethelred, and by him had a son, Hardicanute. In 1041 Hardicanute invited E. from the Norman to the Eng. court, an invitation which implied that Hardicanute considered E. his heir. In 1042 Hardicanute d., and E., not without some opposition, was elected king of England, and crowned at Winchester, 1043. His long exile in Normandy had made him more Norman than Saxon, and he offended many Saxons by his patronage of Norman clergy and knights. It is probable, however, that the Norman element at E.'s court has been exaggerated; the most prominent Eng. family, the Godwins, intrigued against him out of personal ambition rather than Saxon patriotism. In 1045 E. married Edith, Godwin's daughter, but felt strong enough to exile Godwin in 1051. He was forced to receive Godwin back in 1052; but not before William of Normandy, to whom E. is believed to have promised the Eng. crown on his death, had made a visit

to England. He d. 5 Jan. 1066, apparently agreeing that Harold, Godwin's son and successor, should succeed him on the throne. He was canonised, with the title of Confessor, in 1161 by Pope Alexander III. E. had a humility and asceticism rare in a ruler of his time, but, though he could on occasion act with ruthless energy, as when he banished Godwin, he was generally ineffectual, and after Godwin's restoration he appears to have lost what interest he had previously had in affairs of gov. and to have devoted himself increasingly to religion. He spent large sums on the building of an abbey at Westminster, but was too ill to attend its consecration in Dec. 1065, a week before his death.

Edward the Elder (d. 924), Eng. king. E. was the 2nd son of Alfred the Great; he succeeded his father in 899. Much of his reign was spent fighting the Danes; by his death he had conquered all the Danelaw (q.v.) S. of the Humber. In addition, E. was given the allegiance of sev. Welsh princes, and the A.-S. Chronicle records that in 920 E. received the submission of the kings of Scotland and Strathclyde.

Edward the Martyr (d. 978), Eng. king. He was crowned in 975. His short reign was marked by an anti-monastic reaction. His assassination at Corfe Castle in Dorset was probably arranged by the supporters of his half-brother, Ethelred. Shortly after his death he was popularly venerated as a saint and a martyr.

Edwardesabad, *see* BANNU.

Edwards, Amelia Ann Blandford (1831–92), novelist and Egyptologist, b. London. She pub. over 15 novels, the best of which are usually considered to be *My Brother's Wife*, 1855, *Debenham's Vow*, 1869, and *Lord Brackenbury*, 1880. Her lectures on Egypt appeared in print under the title of *Pharaohs, Fellahs, and Explorers*, 1891, but her most universally appreciated book was one of travel entitled *A Thousand Miles up the Nile*, 1877. In 1882 she founded, and was long an honorary secretary of, the Egyptian Exploration Fund.

Edwards, Henri Milne, *see* MILNE-EDWARDS, HENRI.

Edwards, John Passmore (1823–1911), newspaper proprietor, b. Cornwall. Coming to London in 1845, he became a journalist and was one of the promoters of the Early Closing Association. In 1862 he purchased the *Building News*, and in 1876 the *Echo*, the first halfpenny newspaper. It and the *Weekly Times* were the foundation of a great fortune, most of which he distributed in gifts of free libraries and other institutions. Honoured as a philanthropist, he was twice offered a knighthood, but declined it. His autobiography, *A Few Footprints*, was pub. in 1905.

Edwards, Jonathan (1703–58), Amer. divine, b. at South Windsor, Connecticut, was the son of a clergyman, and was himself ordained in 1727. For nearly 24 years (1727–50) he was associated as minister with Northampton, Massachusetts. Here he successfully piloted his people through the great wave of Revivalism, which swept his par. among so many others after

the preaching of George Whitefield. But his vigorous crusade against the circulation of immoral literature, and, above all, his insistence on admitting none but true converts to the Holy Communion, forced him to give up his pastorate. His *Enquiry into . . . Freedom of Will*, 1754, has estab. him as one of America's foremost metaphysicians, while his spiritual nobility shines out in his book, *The Nature of True Virtue*, in spite of the cloud of a somewhat austere Calvinism. He has been called the 'Spinoza of Calvinism.' See life by A. V. G. Allen, 1889; F. H. Foster, *Genetic History of New England Theology*, 1907; V. L. Parrington, *Main Currents in American Thought*, vol. i, 1927.

Edwards, Richard (c. 1523-66), poet and playwright, *b.* Somerset. Educ. at Oxford, he was entered at Lincoln's Inn, but apparently never practised law. He became Master of the Children of the Chapel Royal, and had a high reputation for his comedies and interludes. His *Palamon and Arcite* was acted before Elizabeth I at Oxford in 1566, but *Damon and Pythias*, 1577, a comedy, is his only extant play. He compiled one of the early anthologies, *The Paradise of Dainty Devices*, 1576, which contains many of his own poems. See life by L. Bradner, 1927.

Edwin, Aedwine, or Edwine (c. 585-632), king of Northumbria, son of Ella of Deira. E. married Ethelburga, daughter of Ethelbert of Kent (q.v.), in 625, and was baptised by Paulinus, 627. This resulted in the rapid, if temporary, conversion of NE. England to Christianity. E. was killed by Cadwallon of Wales at Hatfield, 1927.

Eekhout, Gerbrandt van den (1621-74), Dutch painter, *b.* Amsterdam; he was a pupil of Rembrandt and imitated his style closely. His chief subjects are biblical, and of these his small pictures are the best. Some of his pictures are: 'Tobit,' in the Brunswick Gallery; 'The Woman taken in Adultery,' at Amsterdam; 'Simeon in the Temple,' at Dresden; 'Christ among the Doctors,' at Munich.

Eeden, Frederik Willem van (1860-1932), Dutch poet and novelist, *b.* Haarlem. He took his degree in medicine at Amsterdam in 1886 and for a time followed the medical profession. In 1885 he became the editor and co-founder of the paper *De Nieuwe Gids*, which was the organ of the younger literary group. In this he pub. his first novel *De Kleine Johannes*, 1887, a religious story in which he expressed his own deep religious mysticism. His social ideals led him to start a community centre at Bossum which was not, however, a success. In 1922 he was converted to Rom. Catholicism. His greatest poetical work is *De Broeders* (*The Brothers*, 1894), a realistic drama of a feud between 2 brothers to which is given a deep spiritual significance. He wrote a number of plays for the theatre. His best known novel was pub. in 1900, *Van de Koel Meren des Doods* (Eng. trans. *The Depths of Deliverance*, 1902). His journals, *Mijn dagboek* (9 vols.), which illuminate his spiritual life,

have been pub. since his death. See A. Verwey, *F. v. Eeden*, 1940.

Eekloo, industrial tn in the prov. of E. Flanders, Belgium, 11 m. NE. of Ghent. The chief manufs. are cotton, linen, and wool. Pop. (1955) 17,700.

Eel, a species of the teleostean order Apodes, elongated, soft-rayed fishes with an open duct to the swimbladder and long dorsal and anal fins which are continued to the small tail fin. Transparent leaf-shaped larvae (leptocephali) are a feature in the life hist. Most E.s are marine and even the freshwater E.s of Europe and America (*Anguilla*) migrate to the Sargasso Sea to lay their eggs. And as



EEL

Johannes Schmidt found, the leptocephali of the European E. take about 3 years to cross the Atlantic. There are about 20 families of E.s, which include the conger-E.s (Congridae), snake-E.s (Ophichthyidae), Moray-E.s (Muraenidae), and fresh-water E.s (Anguillidae). There are a number of deep-sea families.

Besides these more commonly known E.s, there are the gulper-E.s (order Lymnini) of the deep ocean, black fishes with immense mouths, long dorsal and anal fins and a long slender tail. The spiny-E.s (order Ophichthini), such as species of *Mastacembelus*, are found in the freshwaters of Africa and South Asia. There is a series of spines along the back. The symbranchoid E.s (order Symbranchioidea) have no pectoral fins and rayless dorsal and anal fins. The best known is the cuchia (*Amphipnous*) of tropical Asia. The eusk-E.s (Ophidiidae) are related to the blennies. Lastly, hag-fishes (q.v.) are sometimes known as slime-E.s.

Eel-pout, see BURBOT.

Eelion, see AETION.

Effendi, formerly used in Turkish as the equivalent of Mister. It is now only used with the 1st person possessive suffix as a mode of addressing both men and women, 'effendim.'

Effervescence. The extent to which gases are soluble in water depends upon pressure and temp. When the temp. is low and the pressure great, the gas is more soluble, consequently when the temp. is raised or the pressure lowered, the gas escapes in small bubbles. This phenomenon is called E. The term is also applied to the tumultuous upheaval of any liquid by a gas produced in it, giving it the appearance of boiling. The similar phenomenon *frothing* is often a nuisance during distillation; it may be partly or wholly prevented by adding bits of broken unglazed earthenware to the liquid undergoing distillation.

Efficiency. In any method of transmitting energy from point to point, or of transforming one kind of energy into another, some of it is dissipated or becomes useless. The ratio of the energy available at the end of the process to the total energy supplied is called the E. of the process. Thus, in transmitting mechanical energy by means of shafting, some of it is used in overcoming friction of bearings, etc. The numerical value of the E.s of machines varies very widely. In a simple machine, such as a pulley, the E. may be as high as 80 per cent, and in a screw jack, as used on motor cars, as low as 30 per cent. It must be remembered, however, that the loss of E. is compensated by the fact that the friction prevents the screw jack running backwards when left free. In transmitting electrical energy, some of it is converted into heat in the wires or cables which carry the current. As this loss is proportional to the square of current, it is advisable to transmit energy at high voltage so that the current for a given energy will be correspondingly low. In processes for transforming energy from one kind to another, the E.s show wide variations, and the object of most improvements in 'transformers' or engines is to increase the E. A locomotive engine may transform less than 10 per cent of the heat of the coal burned into available mechanical energy. But in transforming mechanical energy into electrical energy, or *vice versa*, the E.s are usually greater, as much as 92 per cent of the energy supplied being available for use after transformation. The term E. is sometimes used in speaking of electric lamps, where it expresses the candle power per unit of electrical energy supplied.

Efflorescence, in chem., is the term applied to the crumbling to powder of crystals, caused by the loss of water originally present in them. It occurs whenever the vapour pressure of the water in the crystal is greater than that of the moisture in the surrounding air. Glauber's salt and ordinary washing-soda are good examples of efflorescent substances. The converse of E. is deliquescence (q.v.).

Effusion of Gases, see GAS and GASES.

Effusive or Eruptive Rocks, see IGNEOUS ROCKS.

Eft. The terms E. and newt are applied to almost all species of lizard found in the Brit. Isles. See NEWT.

Egadi, Isola, see AEGADIAN ISLANDS.

Egan, Pierce, the Elder (1772-1849),

sporting author, b. London. He is principally remembered for his *Life in London: or the Day and Night Scenes of Jerry Hawthorn, Esq., and his elegant friend, Corinthian Tom, accompanied by Bob Logic, the Oxonian, in their Rambles and Spree through the Metropolis*, 1821; illustrated by George and Isaac Cruikshank, it was the first work of fiction to be pub. in monthly parts, and was extremely popular. E.'s other works include *Boxiana, or Sketches of Antient and Modern Pugilism*, 1818-24, *The Life of an Actor*, 1825, and *Pierce Egan's Book of Sports and Mirror of Life*, 1832. His son, Pierce E. the Younger (1814-80), wrote a number of novels.

Egas Moniz, António Caetano de Abreu Freire (1874-1955), Portuguese neurologist, b. Avanca. He graduated in medicine at Coimbra Univ. in 1899 and continued there as a teacher, becoming deputy prof. of medicine in 1902. In 1900 he was elected to the Portuguese parliament, in which he served on and off for 16 years. In 1918 he was appointed Portuguese minister at Madrid, returning the same year to become minister of foreign affairs, in which capacity he led his country's delegation at the conference of Versailles, 1919. During these years he continued to teach medicine and began to specialise in neurology. In 1911 he became prof. of neurology at Lisbon. In 1927 he introduced cerebral angiography, a method for radiological visualisation of the arteries of the brain, used for diagnosis of cerebral tumours and other brain lesions. After some years of research on the subject he introduced the operation of prefrontal leucotomy as a method of treating mental disorder. This consists of severing certain fibres in the frontal lobe of the brain. The operation gave a powerful stimulus to research into the treatment of mental disorders and gained for E. M. the Nobel Prize in 1949.

Egbert the Great (fl. 802-39), king of Wessex. He was the son of Ethelmund, who had been driven into exile by Offa of Mercia (q.v.). E. conquered the Britons of Devon and Cornwall in 815. In 825 he defeated Beornwulf of Mercia, and soon after Kent, Surrey, Sussex, and Essex submitted to his rule. E. finally absorbed Mercia in 829 and in the same year Northumbria acknowledged his supremacy. E.'s position of overlordship was now unrivalled and the compiler of the A.-S. Chronicle gives him the title *breotwalda*, saying that he was the 8th king to hold it. In 838 the Cornish Britons joined the Danes in an invasion of Wessex, but were decisively defeated by E. at Hengistun (Hington Down). This marked the end of any semblance of Cornish independence.

Egede, Hans Povelson (1686-1758), Dan. Protestant missionary, b. Harstad, Norway. He studied theology at Copenhagen Univ., and was appointed pastor at Vaagen in 1707. In 1721 he went to Greenland where he worked zealously for 15 years. On the death of his wife in 1736 he returned to Copenhagen, but continued his work for the Greenland mission,

of which he became bishop in 1740. He wrote a book on the natural hist. of Greenland.

Eger: 1. (Ger. Erlau) tn of N. Hungary, cap. of the co. of Heves, near the Mátra Mts (q.v.), 65 m. N.E. of Budapest (q.v.). It was one of the first settlements of the Magyars (q.v.), and once possessed a 12th-cent. cathedral (destroyed by the Tatars), said to have been nearly as fine as that at Cologne (q.v.). The present neo-classical archiepiscopal cathedral is modern. There is a ruined fort, and many 18th-cent. buildings of note, such as the baroque Minorite church. The tn is known for its *Erlauer* wine, is a spa, and has a trade in agric. produce. Pop. 32,000.

2. Czechoslovak tn, see CHEB.

3. Czechoslovak and Ger. riv., see OHŘK. **Egerdir**, lake of Turkey in Asia, situated in lat. 38° N., between the Taurus range and the Sultan Dag. It is about 30 m. long, and drains S. into the Mediterranean.

Egeria, Roman nymph, wife of Numa, worshipped in Rome and Aricia as the goddess of childbirth, and connected with the Camenae (water nymphs). It. predecessors of the Muses.

Egerton, Francis, see BRIDGEWATER.

Egerton, Francis Leveson-Gower, see ELLENBERG, 1st EARL OF.

Egerton, George, pen-name of Mary Chavelita Bright (1860-1945), Australian novelist, b. Melbourne. Her father was Capt. Dunne, and she was 3 times married, her 1st husband being H. H. W. Melville, her 2nd Egerton Clairmonte, and her 3rd Reginald Golding Bright. She travelled widely and at one time planned to be an artist, but turned to writing, her novels including *Keynotes*, 1893, *Discords*, 1894, *Symphonies*, 1897, *Fantasies*, 1898, and *Flies in Amber*, 1905. Two of her plays are *The Backsiders*, 1910, and *Camilla States Her Case*, 1925. She also trans. Knut Hamsen's novel *Hunger*, 1926, and was an original member of the Irish Genealogical Society.

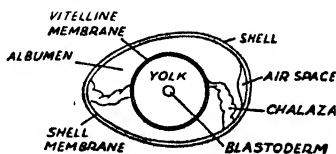
Egesta, see SEGESTA.

Egg, Johann Maier von, see ECK.

Egg (O.E. *ag*; Ger. *Ei*; Swed. *agg*, probably also Gk *ōn*), the female reproductive cell which develops into a new individual. In all but parthenogenetic animals, this process only takes place after fertilisation by the male gamete. When the word is used in this sense, it is directly parallel to the Lat. word *ovum*, and applies to the intra-maternal as well as the extra-maternal existence of the cell. In common speech the word only applies to the extra-maternal *ovum*. *E.s.* vary very greatly in size. In all cases the essential embryo is very small, but variations occur in the amount of yolk present, and in the thickness and structure of the surrounding parts.

Eggs of birds.—Birds lay on the whole the largest *E.s.* The *E.s.* of the extinct *Aepyornis* have a cubic content of over 2 gallons. The ostrich lays the largest *E.s.* of any extant bird. One weighs about as much as 12 hens' *E.s.* At the other end of the scale is the *E.* of the hum-

ming bird which only weighs a few grains. The shell of a bird's *E.* is mainly composed of carbonate of lime. It is often coloured, the colouring being specific to the particular variety of bird. Seven different pigments have been separated from the colouring of *E.s.* Their origin is still obscure, but they are probably derived from the haemoglobin in the blood, and may be in some way similar to bile-pigments. The significance of the colour of *E.s.* is difficult to understand. It probably depends upon the environment of the nest. Thus snakes and such birds as deposit their *E.s.* in holes and in domed nests lay white *E.s.* In such cases coloured *E.s.* would be invisible, and they would be in danger of being broken by the mother. *E.s.* which are laid in open nests, or on the bare ground, are coloured to imitate their surroundings. The brilliant *E.s.* are al-



THE EGG OF A HEN

ways found in nests with elaborate protective devices, or in ones that are carefully hidden.

Eggs of mammals.—Only 2 genera of mammals are oviparous: the *Echidna* or *spiny ant-eater*, and the *Ornithorhynchus*, or *duck-billed platypus*. The *Echidna* carries her *E.s.* in a pouch.

Eggs of reptiles.—These are always white or yellowish. They are smaller than birds' *E.s.* but yet possess a good deal of yolk. The shell is nearly always membranous, but in tortoises, turtles, and crocodiles it is calcareous like a bird's. A few lizards and snakes are viviparous.

Eggs of fishes differ greatly in size and appearance, and some extraordinary varieties are known. Most fishes lay enormous numbers of *E.s.* The sturgeon lays 7,000,000 *E.s.* the turbot over 14,000,000. The number always depends on the risk of destruction, and this rule applies to all animals. For further particulars, see BIRD; POULTRY; REPRODUCTION.

Egg Island, see EIGG.

Eggar-moths belong to the Lasiocampidae, and are well known in Great Britain. They are of large size, covered with scales, are all of a reddish brown colour, and possess a highly developed hind-wing. The length across the wings may vary, as in the genus *Suana*, from 1½ to 4½ in. The walls of the cocoons have sometimes a smooth, shell-like appearance, hence the name.

Egge, Peter Andrias (1869-), Norwegian novelist and playwright, b. Trondheim. In his plays (*Idyllen*, 1910; *Fælen*, 1912; *Narren*, 1914; *De svære valg*, 1924) he gives proof of humour and a fine irony. His short stories dealing with his

native region, Trøndelag, have been particularly successful; also his novels: *Jens i fjordene*, 1920; *Jægtveig og hans gud*, 1923; and *Hansine Solstad*, 1925. See *B. Fjæstad, P. Egge og hans trønderromaner*, 1949.

Egghorn, or Eggeschhorn, mt of the Alps in Switzerland, situated in the canton of Valais, near the head of the Rhône valley, and on the S. slope of the Bernese Oberland. It rises to an altitude of 9625 ft.

Eggleston, Edward (1837-1902), Amer. minister and novelist, b. Vevay, Indiana. He was pastor of the Church of Christian Endeavour, Brooklyn, from 1874 to 1879, after which he devoted himself to literature, his works giving a picture of the life and manners of the Middle West. His 1st novel, *The Hoosier Schoolmaster*, 1871, was so popular that it was trans. into Fr., German, and Dan. Others are *The Circuit Rider*, 1874, *Rory*, 1878, *The Hoosier Schoolboy*, 1882, and *The Graysons*, 1888. See study by W. P. Randel, 1946.

Eggmühl, see ECKMÜHL.

Egham, urb. dist. and tn of the co. of Surrey, England, situated on the r. b. of the Thames, 8 m. from Windsor, and 20 m. from London. The urb. dist. adjoins Berkshire, and has an acreage of 9350. In the urb. dist. are the historic meadows of Runnymede (q.v.). On Cooper's Hill, overlooking Runnymede, is the Commonwealth Air Forces Memorial, unveiled by H.M. the Queen in Oct. 1953. Pop. 25,800 (1954).

Egidio Colonna, see COLONNE.

Egill Skalla-Grimsson (c. 900-83), the most imposing character in the Icelandic family sagas and by common consent the greatest of the Old Icelandic poets. Besides a number of occasional verses, 3 of his major poems have been preserved, only one of them complete. *Egils Saga* (which some scholars think may be the work of Snorri Sturluson (q.v.)) is, after *Njáls Saga*, the greatest of the family sagas, and of this there are 2 complete Eng. translations, while a 3rd is in preparation. Egill was much in England, where he received *prima signatio* so as to be acceptable in Christian society, and there are indications in his poems that the ideas of the heathen religion did not altogether satisfy him. At Brunanburh he fought in Athelstan's forces, and there his brother, Thorolf, a more sympathetic character, was killed.

Egilsson, Sveinbjörn (1791-1852), Icelandic scholar and poet. He was the first man in modern times to interpret systematically the difficult language of the Old Icelandic skalds or poets, and his titanic achievement is the basis of all subsequent research; see his *Lexicon poeticum antiquae linguae Septentrionalis*, posthumously pub. in 1854-60, and since twice ed. by Finnur Jónsson (q.v.), in 1916 and 1931. E.'s Lat. translations of Old Icelandic classics are extensive, and his prose trans. of the Homeric poems into Icelandic is unrivalled. Many of his translations of the Gk classics as well as writings on Old Icelandic subjects still

remain unpublished in the National Library of Iceland.

Egina, see AEGINA.

Eginhard, see EINHARD.

Eglantine, O.E. name for *Rosa rubiginosa* (synonym *eglanteria*), the sweet-briar rose. It is misapplied to the honeysuckle by Milton in the lines from *L'Allegro*:

'Through the sweet briar, or the vine,
Or the twisted eglantine.'

Egmont, Lamoral, Count of, Prince of Gavre (1522-68), Flem. soldier and statesman, b. Hainault. He served as a soldier under Charles V at Algiers in 1541, and in 1546 was made a knight of the Golden Fleece. In 1554 he went as ambas. to England to arrange a marriage between Philip and Mary, which was afterwards solemnised at Winchester in his presence. For his successes at St Quentin in 1557, and at Gravelines in 1558 (where he was in charge of the cavalry), he was made governor of Flanders and Artois. E. did not join in the conspiracy of 1566, though he protested against Sp. misrule in the Netherlands. Alva had him imprisoned at Ghent and, with Horn, E. was beheaded at Brussels on charges of treason, 1568.

Egmont, Mount, extinct volcano (height 8280 ft) of New Zealand, in the S.W. portion of North Island, lat. 39° 15' S. and long. 174° 13' E. It is about 18 m. S. of New Plymouth, and exceedingly beautiful in form.

Ego, term used in philosophy, denotes the individual considered abstractly and not in connection with the world and other persons. It is used in 2 senses, which are termed by Kant 'pure' and 'empirical': the latter term signifies the self in a more concrete sense and includes some part of experience, i.e. an object, while the former, the 'pure ego,' is the conscious subject only, and denotes that everything is referred to a self which experiences it.

In the language of psychology the E. is the object-self of the individual consciousness as distinguished from another (the *alter*). The antithesis of E. and alter necessarily restricts the meaning of E. to the object-self inasmuch as it is in relation to the alter, which is the object of thought. The interpretation of the ego-alter relation has been variously attempted. Some psychologists have developed the thought that the E. is a reproduction of traits first discovered in 'alter' personalities. This view is united with the theory of 'ejection' (someone else thought of in terms of the thinker's own consciousness of himself) by J. Mark Baldwin in the 'dialectic of personal growth'. The self-thought tends to a general form which includes 2 poles, one the E. the other the alter. The elements of content, at first 'projective' in the social environment (i.e. cognised as objects but with no antithesis to subject), are taken up by imitation, thus becoming 'subjective,' a part of the ego, and being then ejected into the other, constitute the alter. See also OBSESSIVE PSYCHO-NEUROSIS. See J. Mark Baldwin (ed.), *Dictionary of Philosophy and Psychology*, 1901-5.

Egoism (Lat. *ego*, I), term used in ethics, generally signifying a system in which the happiness of the individual is the main object in view. Another form of the word, 'egotism,' in direct contrast to 'altruism,' means selfishness. Ethical theorists consider that the self consists of an individual and those things in which he is interested, the self being all-important in the application of moral principles because the egoist, seeking the ideal for himself, stands in direct contrast to the altruist, who seeks it for others. But the distinction between altruism and E. is complicated by the fact that the 2 are often combined. Christian teaching, for example, insists upon duty to self and duty to others, while a truly altruistic system can very rarely be carried out. Indeed those who have studied human character assert that men in general are egoistic, seeing that they aim at the gratification of their personal aims and desires.

Egorievsk, see YEGOR'YEVSK.

Egremont, par. and small tn of Cumberland, England, in the Ennerdale (q.v.) rural dist., on the R. Iken. There are ruins of a 12th-cent. castle. Pop. 6500.

Egret, term applied to sev. species of white herons with long tufts of feathers on the head or neck. The great white E., or the European white heron, is *Casmerodius albus*; and the little E. is *Garzetta* (or *Ardea*) *garzetta*, a native of Europe, Africa, and Asia, which is occasionally to be met with in Britain. See HERON.

Egripos, see EUBOEA.

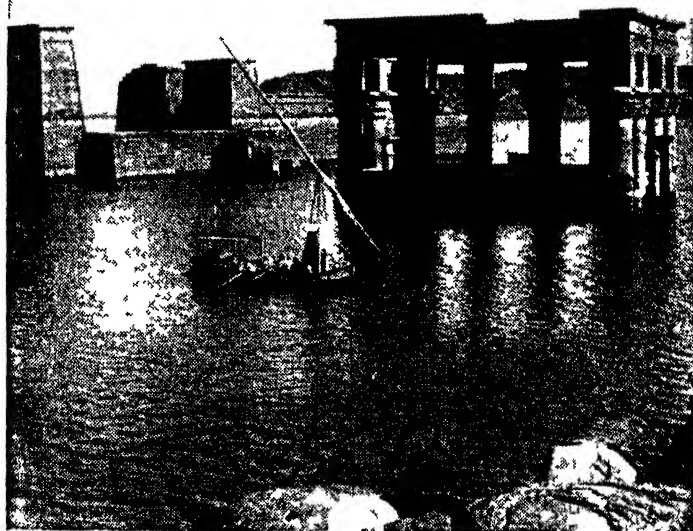
Egypt, a rep. forming the N.E. shoulder of Africa, bounded on the N. by the Mediterranean, S. by the rep. of the Sudan, E. by the Red Sea, and W. by Tripoli and the Sahara. The W. frontier cannot be very clearly defined; the line properly taken is from the Gulf of Sollum, skirting the oasis of Siwa in the Libyan desert and following S. to Wadi-Halfa, so that the oases of the Libyan desert are included. The N.E. frontier is a direct line from Tabá, the head of the Gulf of Akaba, following up the boundary of Palestine to the Mediterranean Sea, the peninsula of Sinai being included in E. The area is 386,198 sq. m., of which less than 14,000 sq. m. can be regarded as settled or cultivated. The country is divided into Upper and Lower E.; Upper E., or *El-Said*, the happy or fortunate, being the Nile valley, and Lower E., or *Wagh-el-Bahri*, the fertile, being the delta. The chief features of E. are the R. Nile and the desert. Without the Nile, E. would never have existed. The riv., with its rich deposit of alluvial soil carried down from the highlands of Ethiopia and given to the land annually during the overflow, has transformed the desert into the fertile strip of valley and the delta. E. and W. of this cultivated land lies the waste of deserts with occasional oases. The delta is a fan-shaped plain, formed of a deep layer of mud and grey sand, lying on the yellow quartz sands, gravel and clay which were laid there in prehistoric times by the sea. It is an extraordinarily fertile stretch of land, watered by the 2

branches of the Nile, the Rosetta and the Damietta, and intersected with canals. The valley of Upper E. is narrow, and the fringe of mts on either side are of no great height, so that the landscape varies but little and might appear to be monotonous but for the rich and wonderful colouring of all the scenery: the vivid green of the fields, the rich red-brown of the riv., the bright yellow of the rocks, with overhead a deep blue sky and brilliant sunshine. The coast-line of E. covers about 600 m., and except at the delta is rock-bound, possessing no harbours worthy of mention. The delta coast-line is low and forms 2 bays, one being the bay of Aboukir. The source of the Nile (q.v.) is Lake Victoria (Victoria Nyanza) discovered by Speke, 1858. The riv. flows into E. proper N. of the 2nd cataract, a little S. of Wadi-Halfa. The Blue Nile, which rises in Lake Tana in Ethiopia, joins the Nile at Khartoum; this stream brings down an immense quantity of red mud. The trib. Atbara joins 200 m. below Khartoum. The cataracts are 6 in number (see NILE). The important feature of the riv. is its ann. inundation. At the end of May the riv. is at its lowest level; it rises gradually in June and continues rising until the middle of Sept.; it then remains stationary for 2 to 3 weeks, rising again until the end of Oct.; it is then at its highest level and commences gradually to fall, until by May it is once more at its lowest. The riv. rises from 21 to 28 ft; when it did not reach this level the crops failed, and when it exceeded it the land was overflowed and ruin faced the people. Nowhere in the world is there such a large pop. depending solely on the produce of the soil. As the climate is exceedingly dry, the ann. rainfall averaging about 1-50 in., irrigation became as early as the 2nd dynasty (about 4514 BC) an object of national importance. All through the ages can be marked the tireless persistence and mechanical ingenuity employed in the problems of irrigation. During the 19th cent., Mehemet Ali Pasha began a gigantic system of canals, locks, and weirs. A Fr. engineer of considerable ability, Mougel Hey, was employed to carry out this difficult task; his great barrage across the Nile, at the apex of the delta, is still a very impressive work; unfortunately the system was a failure. Later, Brit. engineers undertook the management of irrigation, and in 1902 the Nile dam, at the head of the 1st cataract above Aswán, was completed. It had been planned to raise the dam to such a height that the beautiful temples on the islet of Philae would be submerged; for five years they were spared, but in 1907 the dam was raised, and during sev. months of the year the ruins are no longer visible. The chief lakes of E., from W. to E., are Mareotis, Edku, Burlus, and Menzala; these lie only a few m. from the coast and are shallow and brackish. The 7 famous natron lakes lie in a valley in the desert, 80 m. WNW. of Cairo. In the prov. of the Fayum is the Birket-el-Keroun (q.v.), 30 m. long and 5 m. wide, forming the remains of Lake Moeris, which

Herodotus believed to have been artificially constructed. Certainly Amenemhat III completed what his fathers had begun by building a vast embankment and reclaiming an area of 40 sq. m., also carrying out a scheme of irrigation in connection with this great natural reservoir. The climate is extremely dry. E. lies in an almost rainless area. The days are warm and the nights are cool. Jan. is

Ammon, built by Darius I, and also other interesting ruins of the time of the Ptolemies. Siwa contains the oracle temple of Jupiter Ammon, consulted by Alexander the Great. The tn is built on the rocks and has the appearance of a fortress. It was used for many years as a place of banishment for criminals.

Minerals.—Gold and precious stones were formerly found and mined in the



D. McLeish

THE TEMPLES OF THE INLET OF PHILAE, ON THE RIVER NILE

The beautiful temple is surrounded by the waters of the Nile. It is at times almost completely submerged owing to the action of the dam at Aswán.

the coolest month. On the coast rain falls during the winter months, but snow is unknown. In Sinai, snow occasionally falls during the winter, and heavy storms of rain occur which flood the rocky ravines. One interesting feature of the climate is the continuous N. wind, which blows throughout the year, and the sailing boats are thus able to ascend the Nile against the strong current. During the spring the *Kamsin* occurs, a hot, dry S. wind laden with sand, forming a yellow stifling fog almost obscuring the sun. It lasts from 1 to 3 days. There are 5 large oases or fertile places in the W. desert, Siwa, Baharia, Kharga, Dakla, and Farafra. These have been occupied since 1600 B.C. Kharga possesses a temple of

hills by the Red Sea. The Moslem conquest caused the abandoning of this industry. The turquoise mines of Sinai are still productive. The 1st dynasty of Egyptian kings about 4777 to 4515 B.C. possessed these mines and had them worked, and from that time down, through all the centuries, the turquoise from Sinai have been famous. There are emerald mines at Jebel Zubara. Salt is obtained from Lake Mareotis in large quantities; alum is found in the W. oases; carbonate of soda is taken from the natron lakes; hematite iron is obtained in considerable quantities from Sinai and the Red Sea hills. Porphyry quarries once existed, with granite quarries, at Jebel-el-Fatira, and during the Roman occupation were ex-

tensively worked. Gold-mining began once more in 1905 at Um Rus and Um Garalat. The riparian dists. of the lower valley of the Nile are ill-provided with workable mineral deposits, with the exception of abundant building materials. The mineral resources of E. are therefore situated in its otherwise barren deserts, and this fact has retarded exploration and development, though in recent years much progress has been made. The principal mineral products in 1953 were petroleum (2,351,246 metric tons), phosphate rock (484,126 metric tons), gypsum, natron, sodium sulphate, sulphate of magnesia, talc, ochres, and clay. Gold production in 1954 was 17,387 fine oz.

The flora of E. is not of a very great variety. There are no forests or woods, and all available land is used for agric. purposes. Date palms grow wherever they are allowed, together with the sult tree and tamarisk, the mimosa, the eucalyptus and the cypress, also some few others. The rose grows freely, and the violet and many kinds of daisies and poppies. Jasmine is largely grown, being much loved by the Arab and Egyptian. The famous papyrus is not now grown in E., and the lotus flower (a water lily) blooms no longer on the Nile, though found in the delta and cultivated in private gardens.

Fauna.—The camel and the ass are the common domestic animals of E. The camel is not indigenous, but was introduced at an early period. Horses are few and of very inferior type. There are not a great variety of wild animals; the hyena, jackal, and fox are numerous, and wild boars are still found in the delta. Wild cats and hares abound, and snakes and reptiles of various kinds are exceedingly numerous. The crocodile and the hippopotamus, once famous and sacred, no longer dwell by the Nile in E. The bird life is rich; vultures, eagles, hawks, and buzzards are found in quantities, and water fowl in large varieties, but the sacred ibis has gone. The 5 most familiar animals and flowers usually associated with anc. E. are no longer common, i.e. the crocodile and hippopotamus, the papyrus and the lotus, and the sacred ibis; the 6th most familiar object, the beetle (the scarabaeus), still flourishes in many varieties.

The population of E. is estimated at 22,469,000. There are 3 distinct elements in the native pop. The largest or 'Egyptian' element is a Hamito-Semitic race, known in the rural dists. as *fellahin* (ploughmen or tillers); a 2nd element is the *Bedouin*, or nomadic Arabs of the Libyan and Arabian deserts, of whom about one-sixth are true nomads, and the remainder semi-sedentary tent-dwellers on the outskirts of the cultivated land and of the Nile valley and the Fayum. The 3rd element is the *Nubian* of the Nile valley between Aswân and Wadi-Halfa, of mixed Arab and negro blood. The *fellahin* are chiefly Mohammedan in faith, though the Copts (q.v.), also natives of E., have kept their Christian belief. The *fellah* is a hard-working and industrious

person, of big build, with a fine oval face, smooth black hair (the head is usually shaved), and well-formed features. The women are often of great beauty, both in form and feature, though they lose their youth early. The Copts are racially the purest descendants of the anc. Egyptians. The colouring of the *fellah* varies from a fair yellowish shade in Lower E. to a deeper tone in Middle E., and in Upper E. the majority are a deep bronze. The Hamitic tribes speak a language of their own, and are probably descended from the *Blemmyes*, preserving many non-Islamic religious practices and regarding the serpent as sacred. The foreigners (numbering in 1937 about 230,000) are mainly Greeks, Turks, Italians, Brit., Fr., Syrians, Levantines, and Persians. Following the Suez Canal dispute in 1956, the alien pop. was considerably reduced. Of the total pop. some 80 per cent are illiterate and live in great poverty. Malnutrition and disease are rampant. A very high percentage of the people suffer from trachoma which often ends in blindness; more than half have disabling parasitic diseases; some 15 per cent are malarial and almost as many suffer from various forms of venereal disease. Before the Second World War expenditure on public health averaged no more than 8s. per head, compared with £7 in Britain. In religion 9 out of 10 Egyptians are Muslims, a fact which in part explains the remarkable resignation and even cheerfulness with which the masses endure their lot.

Thanks to the modern systems of irrigation the production of cotton has increased in E. by more than half in 40 years and the country is now also self-supporting in food; but whether this increase in food production can offset the steady rise in pop. without a drastic reduction in the more profitable cash crop, cotton, is one of the problems of the future. The chief tns of E. are Cairo (q.v.), the cap., on the E. bank of the Nile, built by the Arabs at the head of the delta about 12 m. from the div. of the riv., pop. 2,100,000; Port Said (q.v.), 177,800; Alexandria (q.v.), chief seaport, 919,024; Damietta (q.v.), 84,400; Rosetta (q.v.), 24,000; Suez (q.v.), S. entrance to the canal, 108,000. The chief tn in Upper E. is the cap. of the prov. of Fayum, Medinet-el-Fayum, 73,642. Other large tns are Mansûra; Asyût, 90,103; Zagazig, 81,813; Mahalla el Kubra, 115,758; Damanhur, 84,352; Minya, 70,298; Beni Suef, 57,106; Giza, 66,156; and Qena, 42,292. All the foregoing pop. figures refer to estimated figures in 1947, the latest now (1957) available.

Many of the modern tns are built upon the sites of anc. cities referred to later in the section on antiquities. The great industry of E. is agriculture. About 4,000,000 ac. are under perennial irrigation, and from these 2 to 3 crops can be annually harvested; the land under basin-irrigation covers 1,750,000 ac., and only one crop can be grown in the year. Cotton, rice, and sugar are the main summer crops, and maize, millet, wheat, barley, and flax form the winter crops. Although

modern iron ploughs and other agric. machines have been introduced, the native wooden plough is still largely used. In the Fayum there are fields of roses, grown for rose-water and perfumes; saffron, indigo, and henna are also grown. The cotton industry is increasing every year; the average over 1897 to 1905 was £E14,000,000; over 1924 to 1928, £E45,777,088. In 1953-4 the cotton crop exported was nearly 7.2 million qantars (1 qantar of unginned cotton equals 315 lb.; of ginned cotton, 100 lb.), and supplied nearly 75 per cent of the total value of the exports of E. The value of raw cotton exported in 1954 was £E113,102,387; textiles exported totalled £E120,433,290. The common fruits are the date, fig, orange, citron, grape, banana, peach, and apricot. In smaller quantities melons are grown and mulberries, also olives. The date is the most valuable of all the fruits, forming one of the chief foods of the people.

The currency is based on a gold standard. The Egyptian pound equals £1 Os. 6½d. sterling, divided into 100 piastres. There are silver piastres, value 20, 10, 5, and 2, and nickel pieces of 1, ½, and ¼ of a piastre, and in bronze ½ and ¼.

For purposes of local gov. the chief tns constitute 5 governorships, and the remaining country is divided into 14 provs., further divided into dists. The provs. in Lower E. are: Behera, including the oasis of Siwa, Gharbiya, Minufiya, Daqahliya, Qalubiya, and Sharqiya. In Upper E.: Giza, Beni-Suef, Faiyum, Minya, Asyut, Garga, Qena, and Aswan.

Education.—In 1933 education was nominally made compulsory for all children between the ages of 6 and 12 years. In 1944 primary education was made free, and in 1950 secondary and technical education. In 1952-3 there were 403 infant schools with a roll of 111,451 (37,150 girls); 7369 primary, 1,464,446 (524,997 girls); 412 secondary, 180,759 (26,725 girls). Technical schools where courses are given in agriculture, commerce, industry, and domestic science numbered 87 under the auspices of the State, and 10 under private control. The total number of students was given as 32,736 and 2018, of whom under 20 per cent were girls. Teachers' training colleges numbered 114 with 23,963 students, including 11,344 women. When the univ. at Asyut is opened there will be 4 in E., with Cairo, Alexandria, and the Ibrahim founded by the gov. in 1950. The total number of students was then approximately 48,000, of whom not more than 4000 were women. The mosque and univ. of El Azhar, founded at Cairo in AD 972, is famous throughout the world as a seat of Muslim law and religion.

Justice.—With effect from Jan. 1936, all religious courts were abolished by decree in Sept. 1955. This took away from the Mehkemas jurisdiction in matters of personal law, certain charities associated with religion, and succession. Before 1883 the only national courts in E. were the Mehkemas (q.v.).

In 1883 the national courts estab.

throughout the country 151 summary tribunals and 14 judicial delegations. These courts have jurisdiction to try cases up to £E250 and in criminal cases which are punishable by a fine or by imprisonment up to 3 years. They cannot try cases involving trafficking in narcotics, for which the penalty can be imprisonment with hard labour for life, and a fine not exceeding £E10,000. Eighteen central tribunals, each of which consists of 3 judges, try civil cases not within the competence of the summary tribunals. They also hear civil and criminal appeals from the summary tribunals. There are 5 courts of appeal at Cairo, Alexandria, Tanta, Mansura, and Asyut. Three judges of the appeal courts sit as an assize court at the central tribunals to hear cases of serious crime, press offences, and trafficking in narcotics. These assize courts sit once a month. Above the courts of appeal a court of cassation was set up in 1931. It is composed of a president, 2 deputy-presidents, and 14 judges. The court is divided into 3 chambers of 5 judges each. Two have jurisdiction in civil, commercial, and personal law, and 1 in criminal. Prosecutions before the assize courts and the summary tribunals are the function of the *Parquet* under the direction of the *Chef de Parquet* whose dept has a number of officials to whom his function is delegated. The investigation of crime is carried out by the *Parquet* or by the police under the direction of the *Parquet*. In 1946 an administrative court was set up composed of 3 judges, although 5 may sit in cases when the validity of administrative regulations is in dispute. The mixed courts were abolished on 14 Oct. 1949. The complete independence of the Egyptian judiciary was guaranteed under Law No. 188 of 1952 which removed from the Minister of Justice the prerogatives of appointments, promotions, transfers of judges, and certain other powers hitherto held by the minister.

The Egyptian Army.—The fellah, as a soldier, is useless without capable officers; when properly led he is excellent. The ancient conquests, however, have been attributed chiefly to mercenaries. For centuries foreign legions were employed, and Mehmet Ali was the first to conscript the fellahin. It was not until 1883 that conscription was organised on a fair basis, and this was greatly improved in 1900. However, the debacles in which the army was involved on the 2 occasions it came into direct conflict with the armed forces of Israel may well result in drastic reforms. Officially, the total strength of the defence forces is given at 100,000 with a national guard of 50,000. Service in the army is obligatory for all male citizens at the age of 18. The army is said to be composed of 2 infantry divs. of 7 brigades each and 300 tanks which form the armoured formation. But these figures must all be accepted with reservation, especially since the conclusion of agreements with the U.S.S.R. and Czechoslovakia for the supply of arms, agreements which have been generously

implemented. Experts from these countries have been employed by E. German military and air force advisers who were prominently associated with the training of Egyptians withdrew owing to unsatisfactory progress by the trainees. The ignominious defeat of the Egyptian Army in Sinai by the Israelis (1956) revealed vast quantities of military equipment and stores supplied by the E. bloc. The Egyptian Navy and Air Force fared no better than the Egyptian Army against Israel in the 1956 campaign, and suffered serious losses. The estimate of £E38,655,400 in the fiscal year of 1952-3, the latest available, is likely to be heavily increased in the future, particularly on account of E.'s commitments to other members of the Arab bloc.

Finance.—The revenue for the year 1955-6 was £E238,300,000, and expenditure during the same period was the same figure of £E238,300,000. These figures are the estimates; actual figures would be extremely difficult to ascertain and virtually impossible to verify. E.'s revenue may henceforth be expected to benefit from income from Suez Canal dues and from confiscation of foreign property. On the other hand defence measures and other military obligations will increase the budget estimate. The most important sources of revenue are from indirect taxes, i.e. customs, tobacco, excise, surtax on luxuries, and miscellaneous, which amounted to £E101,209,000; and land taxes, £E39,559,000. The total revenue 1954-5 was £E221,850,000, which did not include a further estimated £E6,000,000, being the value of property confiscated from the former royal family. Exports of products and manufs. of E. in 1954 amounted to £E138,273,581, and imports to £E160,278,266. The prin. exports were textiles and raw cotton (*see above*). The main importing countries of Egyptian cotton were India and Pakistan, Germany, (E. and W.), and the U.K. (1954). The main imports by valuation (1954) were machinery, £E21,324,415; metals and manufs., £E14,624,587; chemical products, £E10,518,812. The public debt in Feb. 1953 stood at £E208,000,000. The general reserve fund in Feb. 1951 amounted to £E75,372,021.

Railways.—The prin. lines radiate from Cairo to Alexandria (and on to Rosetta), Damietta, and Ismailia (continuing northwards to Port Said and southwards to Suez). From Cairo the line runs southwards for a distance of over 500 m. to Shellal, the 1st cataract. At this point a steamer connection runs to Wadi Halfa, connecting the Egyptian State with the Sudan Gov. Railways. Westwards from Alexandria and near the coast runs a line to the frontier at Sollum, and on to Tobruk, giving the possibility of later linking with Tripoli. The total length of the Egyptian State Railways (excluding the Auxiliary Railways of Upper E. and the W. Oases Railway) in 1945 was nearly 4200 m. The gauge is standard (4 ft 8½ in.), with the exception of that to the W. oases, which is 2 ft 5½ in. gauge. There are 2 other State-owned lines in E.,

the Auxiliary Railways of Upper E., consisting of 282 m. of standard gauge, and the W. Oases Railways, a length of 140 m., connecting the oases of Kharga with the Nile Valley. In addition to the gov. lines, there are nearly 900 m. of light railways exploited by public companies. A swing bridge, constructed after 1939 across the Suez Canal, estab. connection between Cairo and Beirut, over the northward extension of the Palestinian railway system from Haifa to Tripoli in Syria, a distance of 175 m. There is now a continuous line joining E. and Istanbul.

Exploration.—Owing to its early civilisation, wealth, and dry climate, E. amply repays research. The long period of its own independence, the hist. of Hellenism and of a Rom. prov., the rise of Christianity and spread of Islam are all successively well illustrated in E. As early as the 17th cent. European travellers were interested in auct. E. In 1798 Napoleon took with him scientists who compiled the *Description de l'Égypte* and recovered the Rosetta Stone (q.v.). In the 1840's the Prussian expedition under Lepsius recorded scenes and inscriptions as far S. as Khartoum (many since destroyed). Later in the century an Egyptian Gov. museum and Antiquities Service was instituted with Mariette as director. And since the 1880's sev. societies have been engaged in the exploration of E., notably the Egypt Exploration Society and, both recently closed, the Brit. School of Archaeology in Egypt and the French Institute (with Fr. Gov. support), and, until the Second World War, the Ger. Institute. Surveys and excavations were carried on annually by representatives of univs. and museums in America and Europe and also by wealthy individuals, until the rising tide of nationalism in E. stopped all excavation except that carried out by its own Antiquities Service. Scientific excavation began with Flinders Petrie (q.v.) in 1883. Its aim is to collect and interpret all evidence about the hist. of a site, and not merely to hunt for inscriptions, statues, or other objects that have some value even when torn from their context. In 1922 Howard Carter (q.v.) discovered at Thebes the first almost undisturbed royal tomb, that of Tutankhamen (q.v.). Although the tomb had been entered by thieves shortly after the burial, the contents were found practically complete; and although he was an unimportant pharaoh, they fill a large part of the Cairo Museum. Since then almost every year sees finds, of which some, if not as spectacular, are even more important for the reconstruction of hist. Since 1924 the Antiquities Service have been investigating the step pyramid at Sakkara (*see PYRAMIDS*) and adding to our knowledge of this, the oldest stone building in the world, which they have also begun to reconstruct. Recently they have also been investigating a second step pyramid there, that of Sekhemkhet, probably never finished. Further discoveries of importance have been made in the 1st dynasty cemetery at Sakkara by W. B.

Emery, working for the Egypt Exploration Society on behalf of the Egyptian Gov. It is not yet clear whether this is another royal cemetery comparable to that at Abydos, in which case each king must have had a cenotaph as well as a grave, which is possible in view of the dual nature of the recently united kingdom, or whether it is a cemetery of great officials from Memphis. But already much light has been thrown on the architecture and decoration of buildings, the development of the temple, statuary, and inscriptions, showing that advances previously attributed to the Pyramid Age had already been made in the 1st dynasty. Excavations too, made by the Antiquities Service at Helwan, have disclosed the use of stone slabs for lining non-royal graves of that dynasty. At Giza the Harvard-Boston expeditions discovered, in 1927, the secret tomb in which objects from the burial of Queen Hetep-heres, mother of Cheops, had been reburied after the robbery of her tomb. The alabaster sarcophagus was empty, but an alabaster chest with 4 compartments contained her viscera removed at the time of mummification. The furniture, etc., found in this tomb shows the skill of 4th dynasty craftsmen. The carrying chair, for example, had ebony panels inscribed with hieroglyphs of gold, and the smaller objects included razors and manicure implements of gold, and a jewel case containing 20 silver anklets, inlaid with dragonflies of malachite, lapis lazuli, and carnelian. Recently 2 more boat pits, making 5 in all, were discovered by chance at the pyramid of Cheops (see PYRAMIDS). The pits were roofed with stone slabs and are being opened. This is the first time that such a pit has been found intact. The boats were presumably intended for the journeys of the dead king. In the desert SW. of Abu Simbel an army patrol discovered the diorite quarries used in the Old and Middle Kingdoms. At Medinat Habu at Thebes the Americans have revealed the remains of a royal residence of Rameses III, the founder of the temple, with a system of bath-rooms and drains. This is one of the first palaces found in Egypt. At Thebes too the Antiquities Service has recently found a stela of King Kames which throws important light on the struggle with the Hyksos and the rise of the New Kingdom.

History.—The indigenous Egyptians belonged to the Brown race, and pure examples may be seen to-day among the fellahin of Upper E. The race of the 1st dynasty that united finally Upper and Lower E. is uncertain—they had broader heads and heavier physique than the natives, and probably came from Mesopotamia.

The Old Stone Age evolved in E. as it did in Europe, Asia, and the rest of Africa. The oldest Egyptian palaeoliths are found in gravel, some 100 ft above the present Nile. Little is known about the Mesolithic or Neolithic periods. Sites from the former occur at Helwan and Kom Ombo. The only Neolithic sites studied are in the

Fayum. There, barley and wheat similar to that grown to-day were cultivated, and flax was woven into linen cloth. Domestic animals included cattle, sheep, goats, and pigs. Plain burnished pottery was made, and stone implements, of which partly polished axes and adzes ('gouges') and winged arrowheads are typical. The radio-carbon date for the Fayum Neolithic is c. 4440 bc. The relative ages of the Fayum Neolithic and the Badarian, the earliest prehistoric culture of Upper E., have not been estab., but typologically the Fayum is the earlier. The Badarians made fine rippled pottery. They had stone axes and arrowheads similar to the Fayum examples; and green beads of soft steatite glazed (the earliest known glazing), which copied beads of hard green amazon-stone known from the Fayum. They also had copper beads, the earliest known metal objects in E. During the 2 'predynastic' periods following the Badarian, civilisation developed remarkably, progress being due to contacts with Iraq, at this time ahead of E. Itinerant traders were responsible for most contacts, but latterly small bodies of Asiatics estab. themselves by force, as is seen from the Jebel el Arak knife handle. The carving in relief on such handles and on some large ceremonial palettes and maceheads was an Asiatic technique and many of the motifs employed are Asiatic, though the scenes are Egyptian.

Not only turquoise from Sinai but lapis lazuli from Afghanistan reached E., and cheaper copies of them were made in glazed composition (faience). Serviceable axe and adze heads of copper (? mined in Sinai) were in use, and beads of gold and of meteoric iron are known (although iron did not come into general use in E. for more than 2500 years. Bronze made from copper with a little tin did not come into general use till the New Kingdom.). Towards the end of the period, rare cylinder seals from Jemdet Nasr (in Iraq) were found in graves. These seals were copied by the Egyptians who evolved their own pictorial script. The foundations of Egyptian religion were now laid down, and amulets became more general. From Badarian times the dead were buried in cemeteries, with pots and sometimes implements. It was just before copper tools came into general use that the large flint knives reached the peak of their development. At the same time skill was shown in selecting and working various stones into small stone vases. Slate palettes, on which malachite was ground to make a green eye paint, were often shaped to represent animals or fish. Female statuettes in ivory, clay, and pottery occur rarely as early as the Badarian. In the later predynastic, those of men have pointed beards. The distinctive pottery of this period had designs painted on it, at first in white on a dark red ground, and later in red on a light ground. Many of the latter pots found in graves show a boat with a palm branch at the bow and 2 cabins, over one of which, at least, is the emblem of a divinity.

Old Kingdom.—There were kingdoms of Upper and Lower E. in prehistoric times. Hist. begins with the union of the 2 lands by Narmer and the 'followers of Horus' (the falcon sky-god) who conquered the delta from Upper E., where their cap. was Nekhen (Hierakónpolis) and their religious centre Abydos. The slate palette of Narmer (in Cairo) gives a pictorial account of the conquest. The conquered rulers of the delta are represented as foreigners (from Palestine). Whence the aristocracy, who formed the *First Dynasty*, came is uncertain—the best guess is that they came from Iran, the home of their boats with vertical prows and where, in the marshes, imposing buildings are still made on a frame-work of bundles of reeds, which resemble closely the representations of the 1st dynasty shrines. If so, they no doubt reached the Nile by the Wadi Hammamat. A new cap. was constructed at Memphis, near Cairo, between the 2 kingdoms. The traditional founder of this white-walled city was Menes (q.v.). A cemetery of large tombs with mud brick *mastaba* superstructures painted white with patterns representing coloured mats is being excavated at Sakkara, near Memphis. They date from Hor-Aha to the end of the 1st dynasty. Some of them were possibly royal, but it is impossible to say for certain, so much have they been damaged by robbers. There is another cemetery containing graves attributed to all the kings of this dynasty, including those of Narmer and probably some of his predecessors, at Abydos near This, the traditional home of the dynasty, in consequence sometimes called Thinite. This cemetery has suffered, like the Sakkara one, at the hands of man and time, although some large stone stelae with the names of the kings on them survived there, while none survived at Sakkara. At Sakkara the actual burial was in a subterranean wood-lined chamber, with, at either end of it, 1 or 2 chambers in which were buried the deceased's intimate possessions. In the superstructure, which was 12–15 ft high, and had a panelled façade in imitation of the palace of timber and matting, were up to 45 rooms containing many wine jars and other pots, vessels of alabaster and other stones, copper vessels and tools (knives, saws, adzes, chisels, etc.), furniture, games, and everything necessary for the maintenance in the next world of the state which the king kept in life. Further, particularly at Abydos, from the reign of Zer, the 3rd king, to the end of the dynasty, but in ever decreasing numbers (318 to 26), around the chief graves, in orderly rows, were the graves of servants, craftsmen, and concubines, buried with their royal master. Large slabs of stone were increasingly used portcullis-wise to block the way to the burial chamber, which by the reign of Udumu was paved with granite, as at Abydos. Large slabs of limestone were also increasingly used to line large private graves at Helwan, where one sees the germ of stone masonry, when one row of blocks was placed on another. Fragments of shattered objects left by

robbers show that craftsmen had reached standards in making stone bowls, furniture, and objects of ivory which were never surpassed. Jewellery and copper tools were also of a very high class. Hieroglyphs were used in court circles for labels and tablets which may record events, and though they developed into the classical script of E., not enough have been found to render deciphering certain. The administration of the kingdom was organised under great officials, some of whose names are known, and religion was beginning to take its later form. In addition to Horus and Hathor, who specially protected the king, representations of shrines of the deities Neith, Thoth, and Anubis are known. King Zer left an inscription near the second cataract indicating that he had extended his dominion that far.

Under the *Second Dynasty* there must have been a rising of native elements whose god was Set, who thenceforth was execrated as the enemy of Horus. But though little is known of the disturbed beginning of the dynasty, the last king, Khasekhem, reconciled both parties and changed his name to the plural form Khasekhemui, writing it with the animal of Set as well as the hawk of Horus over it. Two of his statuettes were found at Hierakónpolis. Zoser, founder of the *Third Dynasty* and builder of the first (step) pyramid (q.v.) and stone buildings, was probably related to Khasekhemui. His life-size statue, from this pyramid, is in Cairo. Sekhemkhet, builder of the unfinished step pyramid at Sakkara, left an inscription indicating control over Sinai (mines of copper and turquoise). The *Fourth Dynasty* constructed the pyramids (q.v.) of Giza. They developed the true pyramid form and never again was a pyramid so large as the Great Pyramid of Khufu or Cheops built. The shape was probably connected with the belief that the dead king ascended to the sky for assimilation with the sun god Ra, whose worship now received State recognition. Khufu's successor, Dedef-Ra, was the 1st king whose name is a compound of Ra. The *Fifth Dynasty* was founded by priests of Ra from Heliopolis who seized the throne. In the development of their religion they built near Abu Sir, near their pyramids, unique sun temples, in which the central cult object was the solar symbol, a short obelisk (*benben*), in a court open to the sun and situated on a terrace formed like a truncated pyramid. In the best preserved sun temple was found a brick boat, intended for the night journey of the sun. The most important historical relic of this dynasty is the Palermo Stone, of which the largest fragment is at Palermo. It was a black stone slab on which were recorded briefly the annals of the reigns of all the kings from the 1st dynasty, and the names also of some predynastic kings of both Upper and Lower E. In this dynasty, the art of representing scenes in bas-relief reached perfection. Earthly scenes, which the nobles hoped to enjoy after death—banquets, hunting, fishing, farming, etc.

—were reproduced with picturesque detail and humorous comments, as in the tomb of Ti at Sakkara. At the end of the 5th dynasty, magic spells, some of prehistoric origin, are found in the royal pyramids. The purpose of these Pyramid Texts was to ensure for the king a place among the gods, who were not expected to welcome newcomers. One wonder of the *Sixth Dynasty* is the statue of Pepi I, found at Hierakonpolis. It was over life-size and made of copper plates nailed on a wooden core. At Aswán are the tombs of local princes, who were also merchant adventurers, and made long journeys overland with donkey trains to central Africa. The greatest of them was Herkhuf, who on his last journey brought back a dancing dwarf, to the delight of the young king, Pepi II, who reigned for nearly a century, the longest reign in history. In old age he gradually lost grip of the kingdom. New ideas had been coming in since the 5th dynasty. Although still 'the good god,' the king was no longer thought to be really semi-divine. Pepi I had married 2 commoners. Under these conditions officials in charge of districts tended to become hereditary rulers increasingly independent of Memphis. On the death of Pepi II began what is called the *First Intermediate Period*, a time of civil war and foreign infiltration. In Upper E. the nomarchs were busy organising their little kingdoms. In Lower E. the situation is obscure, but everywhere a social revolution was in train, the aristocracy were dispossessed, cultivation ceased, and famine was widespread. The kingdom was not united again until the 11th dynasty. Nothing is known of the 7th dynasty and little of the 8th (Memphite). The delta was overrun by Semites. About 2240 the chief of Herakleopolis set up an independent kingdom in middle E., thus founding the 9th dynasty. The 10th dynasty was also Herakleopolite and recovered control of the delta, but when they advanced S. towards the kingdom of Thebes, the latter took the initiative, and about 2100 bc began a generation of struggle which left E., about 2060 bc, united again under the Thebans. Various innovations during this unsettled period make up for lack of documentary evidence about the life of the times. The pictures of scenes which the dead man hoped to enjoy in the after-life were replaced in the tomb by models which copy the houses and farms of the period, bakeries, slaughterhouses, breweries, boats, and even units of Sudanese troops. At Rifa and elsewhere, model pottery houses, for the use of the soul while enjoying offerings brought to his tomb, provide evidence about middle-class houses. Probably introduced when Semites overran the delta, a stamp seal, shaped like a button, which has been found from N. of the Aegean to India, was in use; and there was a vogue for little amuletic figures in the round, among which was the scarab beetle. These amulets often had their base made into a seal, and thus combined their original function with that of the

button-seal. Eventually the scarab replaced all others, and lasted, with its emphasis now on the amulet and now on the seal, until the last dynasty. The lack of strong gov. led to an increase in tomb robbery, with frequent destruction of the mummy considered essential to survival after death. Thus arose the custom of burying small mummified figures with the corpse to replace the mummy if destroyed. These figures developed into the *shabti* figures of the Middle and New Kingdoms.

The Middle Kingdom.—The reunion of E. was completed by Mentuhotep III of the *Eleventh Dynasty*, and hereditary nomarchs largely suppressed. Control was estab. over Wawat (near the 2nd cataract); and under Mentuhotep I an expedition was sent down the Red Sea to Punt. The arts revived, and a funerary temple consisting of a pyramid surrounded by 2 colonnaded terraces was built by Mentuhotep III at Deir-el-bahri, opposite Luxor. Five hundred years later Hatshepsut had this temple copied by another built alongside it.

The founder of the great *Twelfth Dynasty* was Amenemhat, vizier of Mentuhotep V. His name shows that the cult of Amen of Thebes was gaining ground. The cap., however, was moved N. to between the Fayum and Memphis, where the kings resided and built pyramids. They regulated the irrigation of the Fayum, increasing its fertility. Amenemhat III built a palace there containing 3000 rooms on 2 floors. It was in existence in the days of Herodotus, and known as the Labyrinth. Palestine may have been invaded; relations with Hyblis and Syria were cordial. Trade was carried on with Crete, and in Sinai new mines were opened. Expeditions were made to Punt. In the S. the frontier was advanced to Semna, beyond the second cataract, and defended by impregnable forts. Beyond this frontier a trading post was maintained in Cush, near the third cataract. Little has survived of the architecture of the 12th dynasty—its material was all re-used in the New Kingdom—but at Karnak a small shrine has been reconstructed from pieces found in a pylon. Its reliefs and hieroglyphs are strikingly graceful. The royal pyramids were small and built of brick. The jeweller's art reached, in E., the highest peak, as witnessed by the treasure found in princesses' graves at Lahun and Dahshur. Royal statues, too, attained a standard never surpassed, particularly those of the Theban school, in which the features are accentuated and the portraits vigorous. Those of the Memphite school, while polished, lack the individuality of the masterpieces of the Old Kingdom, whose tradition they follow. The literature of the period consists of instructions, prophecies, and tales. An example of the former was the advice of the aged Amenemhat I to his son, remarkable for bitterness at the ingratitude of his subjects. The prophecies often announce as forthcoming an event which has taken place, as, for example, that of Neferrohu

announcing the coming of a saviour in the shape of Amenemhat I. Of tales, the best known are those of the Shipwrecked Sailor, Sinuhe, and the Eloquent Peasant. There is also the dialogue with his soul of a man tired of life. The era between the Middle Kingdom and the New Kingdom, which began with the 18th dynasty, is called the *Second Intermediate Period*. It is the darkest of sev. dark ages. It probably lasted about 2 centuries, including the domination of E. by the

Hyksos N. of Hermopolis. His brother and successor, Ahmes, then stormed Avaris, drove the Hyksos out of E., and pursued them into Palestine, where he besieged them in Sharuhen, taking it after a siege. He thus became the founder of the *Eighteenth Dynasty*, with its cap. at Thebes. He also reoccupied Nubia, at least as far as the second cataract. His successor Amenhotep I also invaded Nubia and probably extended the conquest of Asia, for at the beginning of his



D. McLeish

THE GREAT TEMPLE OF DEIR-EL-BAHRI AT THEBES

Hyksos, although Manetho gives it 15 centuries. The first 2 kings of the 13th dynasty probably ruled all E. After that the succession is doubtful. The Hyksos or *hekakhasut*, foreign (Asiatic) chiefs (with some followers), in the first place entered the E. delta because of the invasion of the Near East by Aryans. By 1730 they had founded their cap. at Avaris, establishing themselves first as rulers in the delta, and then extending their control over an anarchic and disunited E. without difficulty.

The New Kingdom.—About 1680 bc there was a native rising under the princes of Thebes, who became the *Seventeenth Dynasty*, and gradually confined the Hyksos to N. Egypt and S. Palestine. Horse-drawn chariots were first used in E. in this conflict. King Sekenenra apparently fell in battle against the Hyksos, judging by the gash in the skull of his mummy. The war was carried on by his son Kames, who defeated the

reign Thothmes I (1530-1520) claimed that his empire reached the Euphrates. Thothmes I came to the throne through his wife. By the 2nd year of his reign he had conquered Nubia, as far as the fourth cataract, advancing later to Kurgus near the fifth cataract. He then had to go to Asia to suppress a revolt in Naharein. The relationship to each other, and rights to the throne, of the next 3 rulers are uncertain. Thothmes II, after a short reign, was succeeded by Hatshepsut (1505-1483), daughter of Thothmes I, whom she resembled in energy. She usurped the position to which her sex did not entitle her, having married Thothmes III, an illegitimate son of Thothmes II, but until she *d.* Thothmes III had no power. She abandoned military undertakings for peaceful projects such as an expedition to Punt, and the construction of her funerary temple at Deir-el-bahri, and other temples, in which she was helped by

her architect-minister Senmut. On her death Thothmes III was faced with a serious situation in Asia, opposed by a coalition under the king of Kadesh. His annals at Karnak describe his defeat of the king of Kadesh at Megiddo and subsequent campaigns in Syria, Kadesh, and Naharin. After the capture of Kadesh E. was supreme in Asia, and there was regular friendly intercourse with Crete. Towards the end of his reign he went to Nubia and carved an inscription beside that of Tuthmosis I at Kurgus, as he had done on the Euphrates. His son, Amenhotep II (1450-1415), was energetic, suppressing a revolt in Asia early in his prosperous reign. His son, Thothmes IV (1415-1405), made an alliance with the Mitanni, who needed support against the Hittites, and married a Mitanni princess, who became mother of his successor Amenhotep III (1405-1378). He was the first pharaoh in whose veins ran Aryan blood, and the consequences were unfortunate. By nature an indolent despot, Amenhotep eschewed war and neglected his empire. Early in his reign he took part in many lion hunts and issued large scarabs commemorating killing over 100 lions. E. had reached its apogee. From the Sudan to the Euphrates it was supreme, and sumptuous temples were built throughout the Nile valley, as far as Suib in the Sudan, where temples were erected for the worship of the divine king and his wife Tiy. The colossi of Mennon opposite Luxor are all that is left of his funerary temple. He also married many foreign princesses. The cuneiform tablets found at Tell el Amarna contain the correspondence of Amenhotep III, and his successor, with the kings of Babylon, Assyria, the Mitanni, and the Hittites and the princes of the Aegean Isles and governors of Egyptian provinces in Asia. They throw much light on foreign affairs c. 1380 BC. The Hittites were expanding, and when they won over some Asiatic princes, Amenhotep IV (1370-1352 BC) failed to support those who remained loyal, and soon Egyptian influence, even in Palestine and Syria, was extinct. Amenhotep IV, who was still swayed by his remarkable mother, Queen Tiy, when he came to the throne, was an example of genius akin to insanity. His parents adopted, possibly to counter the influence of the powerful priests of Amen, the Heliopolitan doctrine of the Aton. In his 6th year, Amenhotep IV proclaimed that the pantheon of E., including Amen-ka, king of the gods, was a fiction, and that only one deity existed, an unknown heavenly force that manifested itself through Aton, the visible disk of the sun. He changed his name to Akhnaton, 'pleasing to the sun disk,' and had the Aton depicted with rays, each with a hand holding the sign of life. This was a declaration of war upon Amen and his priests in their own city. The next logical step was the foundation of a new cap. at a desert place, now known as Tell el Amarna. The whole machinery of the state was in the king's hands and for the moment resistance was

impossible. The property of Amen was transferred to Aton, and the name of Amen obliterated everywhere. In all this he was supported by his beautiful sister-queen Nefertiti. The naturalism and fidelity to truth which had begun to appear in the previous reign are characteristic of the art of this time, while the king was often represented with almost a caricature of his facial and bodily peculiarities. Living his own life with his court and family in the city he had created, his kingdom fell into anarchy and his empire vanished; and when he d.



EGYPTIAN SCULPTURE: QUEEN NEFERTITI

comparatively young his city was destroyed and the old religion restored by the priests of Amen. Leaving only daughters, he may have been succeeded by his son-in-law, Smenkh-ka-ha, who d. young and of whom little is known. Little more is known of the short reign of his 2nd son-in-law, Tutankhamen, whose chief claim to fame is that his relatively insignificant tomb at Thebes escaped serious robbery, and its rather decadent contents, now in the Cairo Museum, are one of the wonders of the world. In his reign the Aton heresy was blotted out and Thebes became again the cap., the young king attempting to complete the colonnade of Amenhotep III in the temple of Luxor. When he d. a priestly official, Ai, reigned for 4 years, being succeeded by the orthodox soldier Horemheb, who had administered Lower E. during the reign of Akhnaton and married a sister of that king. Horemheb had recovered Palestine for Tutankhamen, and then acted as regent for him. He was occupied with the reorganisation of the kingdom, dying an old man c. 1321 BC.

The *Nineteenth Dynasty* was founded by another soldier, Rameses I, who had been honoured by Horemheb and came from the aristocracy of Tanis, the anct cap. of the Hyksos. The worship of Set had been maintained there since the expulsion of the Hyksos, although shunned elsewhere in E., and from the physiognomy of the kings of this dynasty it is clear that Hyksos blood ran in their veins. Rameses, already old, reigned 2 years and was succeeded by his son Seti I (Seti—'man of Set'), 1318–1298 bc. Seti and his successors, Rameses II 'the Great' (1298–1232) and Merneptah (1232–1224), were warriors preoccupied with foreign affairs. They were great builders, particularly Rameses II. Seti I defeated the Hittites in Palestine and reconquered it. He then began constructing an original funerary temple at Abydos, where the earliest kings of E. had been buried, representing himself offering to the cartouches of the royal ancestors back to Mena, a list of great historical value. At Karnak the Hypostyle Hall, begun by Rameses I, mainly built by Seti I, and completed by Rameses II, is majestic but heavy. Seti and Rameses II were buried in large tombs at Thebes, and Seti's alabaster sarcophagus is in the Soane Museum in London. Rameses II (the Osmandyas of Diodorus), whose reign was very long, placed his name in most temples. His more important buildings were the Ramesseum (his funerary temple, with clumsy Osirid pillars and red granite colossi) and the rock-cut temple of Abu Simbel. In both are depicted in vast reliefs the heroic events of the Hittite war in Syria. This war, which lasted from 1296 to 1279 and left both sides terribly weakened, was deliberately provoked by Rameses in an attempt to recover the empire of Thothmes III. Eventually the combatants not only made peace, but an alliance, in face of the rising power of Assyria. This peace was kept for the remaining 46 years of Rameses's reign. But the struggle was the turning-point of Egyptian history—henceforth a story of decline. Rameses was succeeded by his 13th son, the elderly Merneptah (? the pharaoh of the Exodus), who had to suppress a revolt in Palestine in which Israel is first mentioned, and to meet an invasion of the W. delta by Libyans and various Mediterranean peoples, including Achaeans and Sardinians. Then followed 30 confused years, when sev. kings reigned, all with doubtful claims to the throne. Setnakht was the founder of the *Twentieth Dynasty*. He restored order in a short reign, and was succeeded by his son Rameses III (1198–1166), the last great king of the New Kingdom. He reorganised the administration and the army. Tribute was again collected from Asia and Nubia. Quarries were reopened and the funerary temple of Medinet Habu built, the walls recording the campaigns of the reign. His greatest victory was in 1191 over the 'peoples of the sea,' Indo-Europeans, who, after sweeping over Hittite country, Cilicia, and Cyprus, had reached Amorite country and were

threatening E. Advancing by land and sea along the coast of Palestine, Rameses III fell upon and annihilated them. He also repulsed 3 Libyan attacks on the delta. The last 20 years of his reign were peaceful, except for a conspiracy in the harem. There followed sev. unimportant kings, all named Rameses, most of whom were in the hands of the priests of Amen. In the reign of Rameses IX a number of royal tombs in the Valley of the Kings were robbed. Under Rameses XI there was civil war, in which Libyans took part. It was suppressed with the help of Nubian troops under the viceroy Pa-nehesi, and one Heri-hor, an army officer, was made chief priest. Shortly afterwards he became viceroy and vizier, and in 1085 he seized the throne, founding the *Twenty-first Dynasty*. For the next 4 centuries E. was ruled by feeble kings with numerous, more-or-less independent, dynasts throughout the country. Heri-hor was not recognised in the N., where the regent, with his cap. at Tanis, had the best claim to be pharaoh by reason of his marriage to a Theban princess; and Heri-hor's son Piankhi on his death succeeded his father only as chief priest. Thenceforth the throne was held for a time in turn by the 2 families, Piankhi's son coming to the throne as Pinedjem I; but later the kingdom was divided by 2 pairs of kings, and with the end of the 21st dynasty (950 bc) came the end of the rule of Thebes. A powerful family of Libyans had become estab. at Heracleopolis. They were immigrants who had come to Africa with the 'peoples of the sea' in the 20th dynasty, and who, as mercenaries, now formed a large part of the army. They had been rewarded with land for their services, and had become egyptianised. One of them now seized the throne as Sheshonq I (950–929), founding the *Twenty-second Dynasty*, and marrying his son, Osorkon I (929–893), to a daughter of Psusennes II, the last Tanite king of the previous dynasty. He asserted his authority in Upper E., and it was probably then that some priests of Amen left Thebes for Napata, whence was to come the 25th dynasty. Sheshonq (the Shishak of the Bible) attacked Palestine after the death of Solomon, and sacked Jerusalem, refilling his treasury and temporarily increasing the prestige of E. Then followed 150 years of increasing anarchy, in which rival Libyan chieftains and the priests of Amen at Thebes were the chief actors.

The Late Period.—Eventually, c. 730 bc, there were 2 movements to put an end to this anarchy, one led by Tefnakht of Sais (24th dynasty) and the other by Piankhi of Napata (25th dynasty); and the hist. of E. becomes a duel between Sais and Napata, with the recently arisen power of Assyria intervening. Tefnakht first united the delta, occupied Memphis, and then moved on Middle E., where he clashed with Piankhi on his way down the Nile. Undoubtedly inspired by the priests of Amen at Napata to restore the anct glories of E., it is uncertain whether

the 25th dynasty were Egyptian descendants of Heri-hor or Sudanese descendants of the kings of Cush (Dongola), in whose ter. Napata lay. If the latter, they were fully egyptianised. Kashta (d. 751 bc) began by entering Upper E. and forcing the Libyan 'wife of Amen' at Thebes to adopt his daughter Amenirdis. Piankhi (751-716 bc) advanced down the Nile and captured Memphis, 731 bc. Many delta dynasts submitted, but Tefnakht hid in the marshes. Leaving the dynasts to pay tribute, Piankhi returned to Napata to celebrate his victory, and Tefnakht came out of hiding. Shabako (c. 707-696 bc) then estab. the Cushite administration firmly over E., and transferred the cap. from Napata to Thebes. Manetho stating that he burned Tefnakht's son Bekenrnof (Hocchoris) alive. In his reign the army of Senacherib the Assyrian invaded Judah, but was forced, by plague, to retire (701 bc). In 686 his successor, Esarhaddon, advanced against E., defeated Taharqa (688-663) on the frontier and took Memphis. Taharqa retook it in 669, but lost it again to Ashurbanipal, who then occupied Thebes (666 bc). The Assyrian reinstated various Egyptian princes as vassals, among them Psammetik I, the founder of the *Twenty-sixth (Saite) Dynasty*. Tanwetamani, Taharqa's successor, made a last attempt to recover E., but was driven out by Assyria and had lost control of E. by 654 bc. His descendants ruled the Sudan for another 1000 years, with their cap. first at Napata and then at Meroe. For some time they claimed the throne of E., but an expedition sent by the Saite, Psammetik II (594-588 bc), in which Gk mercenaries with the iron weapons first introduced to E. by the Assyrians took part, reached Napata and, defeating the Cushites, freed the Saites from fear of their rivals. Saite propaganda against the Cushites has caused it to be forgotten that it was they, not the Saites, who started the reformation in Egyptian religion and art with archaising tendencies. The 25th dynasty were buried under pyramids at Napata, and copied the temples and statuary of the Old Kingdom pyramid builders. Taharqa in particular added to temples in E. and Cush, building fine copies of 5th dynasty temples at Kawa and Sanam Abu Dom. Psammetik I (663-609) freed E. from Assyria with the help of Gk mercenaries, Gk merchants having formed a depôt near Sais that was to develop into Naucratis. Necho (609-593) destroyed Josiah of Judah and his army seized Syria, but in 605 bc his army was defeated at Carchemish by the Babylonians, who drove him back to E. Uah-ab-ra (588-567), the Hophra of the Bible and Apries of the Greeks, occupied Phoenicia and encouraged Judah to revolt against Babylon, failing to give adequate support. Jerusalem fell to Nebuchadnezzar II, and many inhab. were carried into captivity, a remnant, including Jeremiah, fleeing into E. Towards the end of his reign a revolt, inspired by anti-Gk nationalism and supported by the displaced Libyan

military class, led to the replacement of Apries by the Egyptian general Amasis (568-525), who, in view of the prevailing xenophobia, concentrated the Gk merchants at Naucratis and Gk troops at Memphis. By the end of his reign Persia, supreme in Asia, was about to attack. In the 1st year of his son, Psammetik III (525 bc), Cambyases invaded E. and took Memphis. E. now became a *Persian* prov. (27th dynasty). Herodotus, the Gk historian, naturally gives an unfavourable account of the Persians, but there is evidence that they respected Egyptian beliefs, and under Darius tried to codify Egyptian laws. Darius built a temple at Kharga and exploited the trade of E., reopening the canal between the Mediterranean and Red Sea, first opened by Necho. After the Persian defeat at Marathon, the Egyptians revolted but were easily crushed. After further Persian defeats by the Greeks, another revolt was led by Inaros the Libyan and Amyrtaeus of Sais in the reign of Xerxes, which was supported by an Athenian fleet of 300 triremes. The fleet reached Memphis and enabled the rebels to defeat the Persians at Papremis. The latter took refuge in Memphis, where they were besieged for 18 months before finally defeating the rebels. An eponymous grandson of Amyrtaeus succeeded, after 6 years, in freeing E. from the Persians (404 bc), becoming sole king of the *Twenty-eighth Dynasty*, 404-398 bc. The *Twenty-ninth Dynasty* (from Mendes) carried on the struggle against the Persians with the help now of Sparta and now of Athens. It was eventually replaced by Nectanebo I (378-360) of Shennytos, founder of the *Thirtieth Dynasty*, with the support of the priests of Sais, whom he rewarded at the expense of the Greeks of Naucratis. His strained relations with the Greeks encouraged Artaxerxes II to attempt to reconquer E. The first Persian invasion was repulsed, and Nectanebo made additions to sev. temples. His successor, Teos, tried to make friends with the Greeks, introducing taxes to enable him to strike drachmae to pay Gk troops. He was thus enabled to set out for Asia at the head of a mixed force of Greeks and Egyptians. But, owing to the treachery of his brother whom he had left as regent, his nephew, Nectanebo II (359-341), won over half his forces and so secured the throne. He suppressed a revolt at Mendes and then built a number of monuments, the last Egyptian works of art. Artaxerxes III, Ochus of Persia, then decided to reconquer E., and after a long campaign succeeded in doing so. Eight years later Darius III was defeated by Alexander the Great at Issus, 333 bc; and the same year, encouraged by an Egyptian who had helped him in the battle, Alexander entered E., which was now so decadent that it welcomed its new master. He tactfully recognised the gods of E. and got himself recognised by Amen at Siwa. In 331 bc he founded Alexandria to take the place of Naucratis. In the div. of his conquests, E. fell to the share of one of his

generals, Ptolemy, son of Lagos, who founded the Ptolemaic Dynasty. He contrived to get possession of Alexander's body, and struggled to add Cyrenaica, Cyprus, and Palestine to his empire. Under the rule of the Ptolemies, in spite of heavy taxation, E. once more prospered. Ptolemy I commenced the famous library and museum at Alexandria. He wrote a hist. of Alexander's campaigns, and he introduced the worship of Serapis. Ptolemy II completed the lighthouse at Alexandria known as Pharos, regarded as one of the 7 wonders of the world. The splendour of his court was famous. Manetho the priest wrote his hist. of E. during this reign. Ptolemy III, Euergetes I, made war on the Seleucid kingdom, and marched into Babylonia, receiving the submission of Iran. He left more monuments than his fathers, among them the temple of Edfu, finished by Ptolemy XII. Ptolemy IV won the battle of Raphia (217) in Palestine against the Seleucids. He was a debauchee, and the decline of the Ptolemaic kingdom began during his misrule. Ptolemy V came to the throne at the age of 5, and Egypt suffered from incompetent regents. Antiochus the Seleucid recovered Palestine, giving Ptolemy his daughter, Cleopatra, in marriage at the peace. Many nationalist risings by Egyptians were severely suppressed. The joint reigns of Ptolemy VI and Ptolemy VII, the sons of Ptolemy V, were notable for strained relations with the Seleucids, family strife, and the intervention of Rome. In 134 the kingdom was divided, Ptolemy VII taking Cyrene. In 145 Ptolemy VI *d.* in battle in Syria. His infant son was immediately murdered by Ptolemy VII, who married both Cleopatra the mother and Cleopatra her daughter. He left Cyrenaica to an illegitimate son (who left it to Rome on his death), while Cleopatra and her sons, Ptolemy VIII and IX, inherited E. and Cyprus. A period of domestic strife followed, and a native rising in which Thebes was damaged. Ptolemy X came to the throne with the support of Rome, married his cousin Berenice III (q.v.), and immediately murdered her, being assassinated himself by the enraged mob. This ended the legitimate family. Ptolemy XI, Anuletas, an illegitimate son of Ptolemy VIII, was then chosen. He was not recognised at first by Rome, but eventually Caesar persuaded Rome to recognise him. Expelled by popular hatred, he spent 3 years in Rome and was then restored by Gabinius, proconsul of Syria. Dying in 51, he left E. to his daughter Cleopatra (q.v.), aged 17, and her young brother Ptolemy XII. Egyptian hist. then coalesces with that of the Rom. world, with the murder in E. by Ptolemy XII of Pompey after his defeat by Caesar (48). Cleopatra then used her fascinations to persuade Caesar to support her in her quarrel with her brother. One story is that she had herself carried into his camp wrapped in a bundle of rugs. Cleopatra was placed on the throne to rule with her younger brother, Ptolemy

XIII; the child *d.* soon afterwards; tradition says he was poisoned by Cleopatra's order. She then lived openly as Caesar's mistress, but after his assassination she went no more to Rome, and her son, whom she asserted to be Caesar's child, called Caesarion, was associated with her on the throne as Ptolemy XIV. The Rom. triumvir, Mark Antony (q.v.), succeeded Caesar in her affections; the story of their love is well known; it was the ruin of both Antony and E. When Octavianus sailed to E. he murdered the little Ptolemy XIV, Mark Antony *d.* by his own hand, and Cleopatra, knowing her kingdom lost, and refusing to become a Rom. captive, *d.*, according to tradition, by applying an asp to her breast. Thus ended the reign of the Ptolemies, and E. now became a Rom. prov. The Ptolemies left many beautiful monuments behind them, among them those on the is. of Philae. The last native king of E., Nectanebus, built a temple to Isis there, which Philadelphus reconstructed. The unfinished kiosk, known as 'Pharaoh's bed' is one of the most beautiful ruins on the is.; the temple of Ptolemy (Euergetes I) is also famous for its beauty. As a Rom. prov. 30 bc, E. was under the rule of a prefect. The first was Cornelius Gallus. In his time the Nubians raided Aswan and stole a statue of Augustus. The Romans then marched to Napata, which they sacked, after meeting the queen (Candace) of Meroe there, but failing to recover the statue. During the reign of Claudius the valuable Indian trade was secured for E. Most of the Rom. emperors from Tiberius onwards adopted Egyptian names and titles in E. Hadrian twice visited E., and founded Antinoe. Graeco-Rom. buildings of this period are numerous. Under Marcus Aurelius the suppression of a serious rebellion caused lasting damage to the prosperity of the country. One Rom. general called Avidius Cassius struggled to make himself emperor of E., but he was slain by his own troops.

When Christianity first began in E. is not quite certain, but probably very early; many Egyptians adopted it as the hope of a future life coincided with their own views. It must always be remembered that the Egyptians thought more of the future life than the present, and that from the earliest times they were a deeply religious race: it was obvious therefore that having adopted Christianity they would do so thoroughly, and under Severus they suffered severe persecutions which merely added to their zeal, and they soon made Alexandria a centre of Christian learning. During the rule of Caracalla (AD 211) all the men who could possibly bear arms as soldiers were massacred in Alexandria, because of some real or fancied insult to Caracalla. Under the rule of Decius the Christians again suffered terrible persecutions. In AD 270 Zenobia, the famous queen of Palmyra, invaded E., and Athenodorus, her son, governed E. jointly during the reign of Claudius. When Aurelian became emperor he perceived the dangerous policy

of the Palmyrene queen, as her son was already having coins struck bearing the imperial title. Aurelian drove the Palmyrenes from E. His army was led by Probus, and E. was ruled by Rome again. Probus became governor of E., and under his rule repelled the tribes of Blemmyes who came from the E. Sudan and who were dominating the whole of the Thebaid. Under Diocletian the country was still troubled by them, and a formidable revolt broke out led by Achilleus, who called himself the Emperor Domitianus. Diocletian came to E. and captured Alexandria, and Achilleus was slain. The Blemmyes retired to the Sudan, and an arrangement was made to pay them a fixed annual sum on the understanding that they ceased from raiding Rom. ter. A temple was built at Elephantine where both sides swore to observe this covenant. 'Pompey's Pillar' was erected during Diocletian's rule to commemorate part of the corn tribute being paid to the Alexandrians. The Christians at this period were again persecuted with savage cruelty and they fled to the deserts in large numbers, building and hiding in obscure monasteries. In 378 Theodosius the Great proclaimed Christianity to be the religion of his empire. E. at once turned her attention to converting the temples of the auct gods of her country into churches. The temple of Serapis at this time was the scene of a bloody conflict between the Christian mob and the remnants of the pagans; finally it was converted into a church for the use of the Christians. This was the real death-blow to Paganism; the Christians showed as little mercy as the pagans in asserting the supremacy of their belief. During the reign of Justinian, while the army was occupied in quelling an invasion of the Blemmyes, Chosroes, the Persian, invaded E. and easily conquered her, holding her for 10 years. Heraclius defeated the Persian and won back the country for a little while, but one stronger than he was rapidly gathering forces on her borders to take and possess her finally. E., weakened by her long internal struggles and utterly impoverished by the years of misrule, now fell an easy prey to Amr-Ibn-al-Asi, the gen. of the Khalifa Omar, and the once great E. became a prov. of the newly-founded Arab empire. See below, *Muslim Conquest*.

Religion.—There was no one organised religion in auct E. Magic was a power which gods possessed and by discovery of which man could control the gods. It was particularly necessary after death. No one god was eternal or almighty and the cosmogonies developed at different times and places were not valid all the time. Some gods as Min, Horus, Hathor, and Anubis (q.v.) occurred in the prehistoric period when each locality had a separate deity manifested in some animal or object. Identification of the king with the falcon god Horus led to anthropomorphisation; though usually given a human body gods seldom have a human head, unless, like Min and Ptah (q.v.), they

start with human form. Political changes led to disappearance of some gods and the rise of others. Conservatism and compromise often led to the merging of old gods with those whose importance increased, e.g. Ptah-Sokar, Amen-Ra. Horus was originally a sky god, represented as a falcon. The rivalry of Horus and Set is probably connected with early civil wars. At Heliopolis near Memphis Ra was worshipped as the sun itself. In the 4th dynasty the king became known officially as 'son of Ra.' The winged disk, usual over temple doorways, represents the fusion of Ra, Horus, and the king. About the 5th dynasty in the Delta arose the cult of Osiris (q.v.). Set, Osiris's brother, killed him but was eventually defeated by Osiris's son, Horus, the younger, who became king, and enabled Osiris to rise and become ruler of the dead. In the social revolution of the First Intermediate Period the identification of the dead king with Osiris was extended to commoners, every dead Egyptian becoming known as Osiris So-and-so. This led to a great spread of the Osiris cult, Abydos becoming its centre. Mont, the god of the princes of Amant, became important when they reunited E. as the 11th dynasty; and when they were replaced by the Theban 12th dynasty Amen (q.v.), an obscure god of Thebes, became important; but the real ascendancy of Amen began with the victory of the Theban 18th dynasty over the Hyksos, Ra being eliminated by his association with Amen as Amen-Ra. In the New Kingdom various foreign deities were introduced, among whom were Reshep, Astarte, and Anat. During the Late Period Osiris became supreme god, even taking the place of Amen-Ra as ruler of this world, and, his wife Isis becoming chief goddess, the cult of their son Horus the Child (Harpoocrates) became very popular. When the Greeks came to E. they saw analogies between their gods and those of E. At Memphis they adopted the cult of the ostrified Apis as Serapis (q.v.), and Serapis was chosen by Ptolemy I to be the god common to the Greeks and Egyptians, a fine temple (the Serapeum) being built for him at Alexandria. The worship of Serapis and Isis especially spread eventually to Rome and Greece.

In E. various dogmas were evolved to explain the creation of the world (see NUN). At Heliopolis it was taught that Atum emerged on a mound from watery chaos and created Shu, the air, and Tefnet, cloud, and they created Nut, the sky, and Geb, the earth. At Memphis a complicated reconciliation of this Heliopolitan theory, with Ptah being creator, was evolved.

No detailed account of the creation of man is known, but Khnum, originally a ram god, was said to fashion man on a potter's wheel. Men could become gods after death. An example is Imhotep, the vizier of Zoser, builder of the Step Pyramid, who was deified in the Saite period and later identified with Asklepios.

The earth was generally thought of as a flat disk floating on Nun, the primeval

water, and bounded by mts which supported the sky. The world under the earth was called Duat. The sun appeared in the morning between 2 mts and travelled across the sky in a boat. The sun is represented in various forms, often as a red disk, sometimes between the forelegs of a scarab beetle, pushing it before it, like the ball of dung in which the scarab hides its eggs, the seed of new life as was the sun-rise. Reaching the W. the sun god entered another boat and returned to the E. beneath the earth. Another idea was that the sun was a child which entered the mouth of the sky goddess and passed through her body to be born in the morning, or a calf if she was thought of as the heavenly cow. These ideas could be combined, and the sun god in human form may be seen in his boat sailing over the belly of the heavenly cow. The heavenly cow, Hat-hor, the 'house' or spouse 'of Horus,' the falcon sky god, was an early goddess, with whom Nut, the sky goddess, was later assimilated. Two funerary works, which provide the texts on the tomb walls and sarcophagi of the kings from the New Kingdom and shortened versions in ordinary people's graves, are the Book of Gates and Book of Him-who-is-in-the-Underworld. The first describes the divs. of the underworld and the gates, each guarded by a being with a knife, through which the sun at night had to travel; the second describes the 12 regions corresponding to the 12 hrs of the night through which the sun travelled, and the gods and demons inhabiting them.

Some deities were the personifications of ideas, e.g. Maat (q.v.) = Truth. Hapi represented the Nile flood. Two important gods who never became supreme universal gods but were worshipped everywhere were Thoth and Anubis (q.v.). There were also smaller deities, popular with all classes, which had no sanctuaries of their own, but were worshipped at home. The 2 most important were Bes (q.v.) and Thoueris, represented as a pregnant hippopotamus and believed to ensure protection in childbirth.

Only once in Egyptian hist. was an attempt made to introduce true monotheism—by Akhnaton (q.v.). Officially the king was theoretically divine, the only mortal entitled to direct contact with the gods. He was the mediator between gods and men. It was not until the Second Intermediate Period, with the spread of the cult of Osiris, that equality for all in religion was achieved, and figures of gods begin to appear on the monuments of common people.

Amulets thought to possess magical properties were popular. They include the *scarab* (usually seal as well as amulet), symbol of the creator god Khepera; the *ankh*, symbol of life; the *shen* (circle with tangent, meaning 'protection'), which became the cartouche of the kings; and many others. Magic *shabti* statuettes were buried with the dead; they were supposed to come to life and perform all hard work in the other world for the person buried with them.

Life in Ancient Egypt.—Hieroglyphs, a form of pictorial writing, came into use in the 1st dynasty, and were used for monuments until the 3rd cent. AD. When written cursively (so that the hieroglyphs are hard to recognise) the script is known as hieratic. Another form of cursive, called demotic, arose for use in business, etc., in the 7th cent. BC, when hieratic was confined to religious texts. In the Ptolemaic period Greek became the official language. Coptic is the popular language of E. written in Gk characters with a few others borrowed from demotic, used from the 3rd cent. AD on. For the deciphering of hieroglyphs see CHAMPOLLION and ROSETTA STONE. Writing materials consisted of papyrus, brush, and pigments mixed with water. Papyrus was made from strips of pith from the stems of the marsh plant papyrus, beaten together and dried. Much literature has survived, including documents of all kinds. Some important religious texts have already been mentioned. Tales, both realistic and imaginative, exist, and some love poems. Among chronological works, besides the Palermo Stone and the Abydos king list, already mentioned, is the Turin Papyrus dating from Rameses II, giving names of 300 kings arranged in dynasties similar to those of Manetho (q.v.). Sev. medical papyri show that there were specialists with some knowledge of human anatomy, while treatment was often magical.

The king wore special costumes, including the white crown of Upper and the red crown of Lower E., often united, with the cobra on his brow. Queens regnant were exceptional, see HATSHEPSUT and CLEOPATRA. Inheritance through the female line was recognised, and marriage with the heiress princess brought a right to the throne. Brother-sister marriage in the royal family occurred, becoming general in Ptolemaic times; it probably occurred also among the common people. Polygamy was recognised, but the position of the woman, particularly of the senior wife, the mistress of the house, was high. Children were prized; they had many toys, such as ninepins, dolls, balls, and animals with movable limbs. The man who could read and write was respected, and there were colleges for aspirants to the priesthood, which was partly hereditary. The embalmers of the dead formed a distinct class.

Slavery increased greatly after the wars of the New Kingdom, when a class of professional soldiers also arose. Sudanese mercenaries were always used, and Greeks in the later period.

The wealth of the country came from cultivation of rich alluvial flats regularly inundated by the Nile. Corn, vegetables, date-palms, and vines particularly were grown. Bread and beer were the main items of food and drink. Trade was carried on by barter; coinage only came into regular use under the Ptolemies. Royal expeditions were made to Punt, Syria, Sinai, and elsewhere to obtain timber, metals, etc., but much external trade was always in the hands of

foreigners. Gold, turquoise, lapis lazuli, amethyst, and cornelian were the chief materials of the jeweller, who excelled in his art by the 1st dynasty and reached his zenith c. 2000 B.C. Beautiful furniture, inlaid with ivory, ebony, etc., was produced at the same time for the rich. Jewellery was worn by both sexes; often, in the case of men, with fans as insignia of rank. Metal mirrors, razors, and alabaster containers for pigments and unguents were important toilet articles. From earliest times the Egyptian was a skilled potter, but as luxury vessels pots were early replaced by vessels of stone, and then of copper and bronze. Opaque

to take E. They defeated the Romans at Heliopolis, AD 640. It is probable that Cyrus, the governor of E., may, for reasons of his own, have assisted in betraying the country to the Muslims. It is certain the Copts helped the enemy, and E. was conquered with very little difficulty. The pagan pop. embraced the faith of Islam, but the Copts remained Christians. The Arabic language rapidly spread and gradually superseded Egyptian. Now began a hist. of bloodshed, cruelty, tyranny, and treachery that it would be difficult to exceed. For about the first 100 years the Christians were tolerated, and then a series of terrible persecutions



D. McLeish

THE AVENUE OF SPHINXES AT THE ENTRANCE OF THE TEMPLE OF KARNAK

coloured glass was introduced in the New Kingdom, but transparent glass not until Rom. times. Brightly coloured glazed composition (faience), usually blue or green, was used at all periods for small objects, beads, etc. Linen was woven from neolithic times, and soon reached a wonderful degree of fineness.

The clothes worn by the Egyptians were very simple for a long period: a loin cloth and a belt for the men and a short, tight petticoat for the women, made of linen, wool being unclean. The children went naked, both rich and poor. Later the men wore a skirt reaching to the knees, with a curious triangular front, which stood out as though starched. The women's skirts became longer and were held up by braces over the shoulders, leaving the upper part of the body bare. The people of the 18th dynasty wore more elaborate clothes; cloaks and tunics became fashionable with fringes and embroideries. Sandals were made for the feet and elaborate wigs for the head. The men all shaved their heads, the young boys retaining a long plaited lock on the side of the head until they came to manhood. The women plaited their own hair in fashions which varied with the period.

Muslim Conquest.—In AD 639 Omar I, the 2nd caliph, sent an army of 4000 men

commenced. A series of ineffectual revolts occurred, which were crushed with great cruelty. In 832 the Copts raised a more serious revolt, and Motasin, the feudal lord, failed to suppress them. The caliph Mamun came to E. to assist and the Copts were defeated. All the men who were caught were massacred horribly and the women and children sold as slaves. This finally subdued the Coptic nation. In AD 868 E. was given in fief to a Turkish general called Bayikbeg, the son of a slave, who had risen in the caliph's service; from this time onwards various Arabs, Turks, and Syrians succeeded in obtaining the throne of E.; many of them were murdered, and the struggles of different persons to obtain power, together with heavy taxation, reduced the country to an utterly wretched condition. In 1164 the Franks invaded E. and joined a usurper called Shawar; they were defeated by Shirkuh and his nephew, the famous Saladin (q.v.). Saladin took the title of sultan, and during his rule E. recovered a little. His son Othman succeeded him, and another period of disputes and disasters convulsed the country. The Mameluke dynasty began after the death of the sultan Nagm-al-din, who had purchased vast numbers of slaves and turned them into soldiers; these were called the

Barl Mamelukes. In 1515 war began with Selim I, the Ottoman sultan, who defeated the Mamelukes and incorporated E. with the Ottoman empire; the country then became a Turkish prov.

Modern History.—From this time until the Fr. expedition in 1798 the gov. suffered constant changes; sev. rulers were murdered, with continual bloodshed, cruelty, and internal revolts. The Fr. expedition was presumably to suppress the Mamelukes and restore the authority of the Sublime Porte, but it was the beginning of that dream of Oriental conquest that always possessed Napoleon. Napoleon landed and, after taking Alexandria, defeated the army of Murad Bey and Ibrahim Bey at the battle of the Pyramids. He then estab. a municipal council at Cairo, and the Fr. exercised dictatorial power. The Fr. fleet was destroyed by Nelson and the Eng. In the great battle of the Nile in 1798. Napoleon went off on an expedition to Syria, leaving Fr. governors at Cairo, Alexandria, and Upper E. The Sublime Porte sent a double expedition to recover E. by force. The Fr. general, Kléber, defeated the Turks, and a certain amount of order was restored. Kléber was assassinated, and Gen. (Baron) de Menou succeeded in command. His declaration of a Fr. protectorate over E. convulsed the country again. In 1801 the Eng., commanded by Sir Ralph Abercromby, landed at Aboukir and invested Alexandria. Gen. de Menou attacked them, but he was defeated. Sir Ralph Abercromby *d.* from his wounds received in the battle. The combined Brit. and Turkish armies under Gen. J. Hely Hutchinson and Yusuf Pasha marched to Cairo, and the Fr. general, Belliard, finding himself overwhelmed, agreed to evacuate Cairo and leave E. with his troops. Gen. de Menou at Alexandria was compelled to accept the same conditions, and both left for France, thus terminating the Fr. occupation of E. Troubles arose almost at once. The Turks treacherously tried to exterminate the Mamelukes. Gen. Hely Hutchinson took measures at once against the Turks, who submitted and gave up their prisoners. Mohammed Khorsvid was the 1st Turkish governor after the Fr. occupation. The Turks and Mamelukes continued to fight, and the Albanian soldiers rebelled against the Turks successfully, and Mahommed Khorsvid fled. Tahir Pasha, the leader of the Albanians, seized the gov., but was assassinated 23 days afterwards. Mehemet Ali, an Albanian commander, allied himself to the Mamelukes; this was the beginning of further terrible struggles; one faction of the Albanians placed Ahmed Pasha Khorsvid in the seat of gov. His rule was abominable and the half-starved and ruined people of Cairo waited in misery for a deliverer. Three thousand Kurdish troops were sent from Syria to Cairo to strengthen Khorsvid, but they behaved with such brutal ferocity that Mehemet Ali returned, and was hailed by the people as their leader and saviour. A furious and bloody struggle took place between the forces of the 2 pashas.

Khorsvid was recalled to Turkey, and Mehemet Ali made himself governor of E. The beys (Mamelukes) disputed his authority; Mehemet Ali arranged and carried out successfully a treacherous and horrible massacre of the Mamelukes. In 1807 a Brit. force arrived under the command of Gen. Mackenzie Fraser. The troops entered Rosetta without opposition, but were trapped in the narrow streets; every roof and window rained fire on them from the hidden garrison, 185 Eng. were killed and 281 were wounded. A series of disasters followed. Mehemet Ali marched to Cairo, having allied himself to his enemies, the beys, for the purpose of driving out the Eng. The Eng. were defeated and obliged to retire. Mehemet Ali then proceeded to massacre the remaining beys, and finally remained the sole undisputed possessor of E. He recognised the suzerainty of the sultan, and complied with the command of the Porte to send an army against the Wahabis (q.v.). He returned to Cairo on the day of the battle of Waterloo. Mehemet Ali now turned his attention to Egyptian domestic affairs; he created for himself a monopoly of the industries of the country, and by nationalising the land became the proprietor of all the cultivated soil of E. He started and encouraged the cotton-growing industry in the delta, which was perhaps the best thing he ever did. He ordered the new canal between the Nile and Alexandria to be dug, which was done with forced labour and under such wretched conditions that 20,000 fellahin *d.* before it was completed. The country was still heavily taxed; all the necessities of life were 4 times the price they formerly had been; the land became utterly impoverished; and the finances were in hopeless chaos. In 1838 a commercial treaty with Turkey was arranged which destroyed the monopolies, and matters grew a shade better. Mehemet Ali reorganised his army, and the fellahin and negroes replaced Turks and Albanians. The sultan appointed him governor of Crete, and in 1824 a fleet of 60 Egyptian vessels sailed to Suda Bay to assist the sultan against the Gk insurgents. The European powers intervened and Mehemet Ali withdrew to E. In 1833 the sultan appointed Mehemet pasha of Syria and the dist. of Adana, so that Mehemet now became the sole ruler of a large empire, while he was only responsible for a small tribute to the sultan. In 1841 the powers again intervened: Mehemet was becoming too strong and too aggressive; he was compelled to submit to certain restrictions. He *d.* in 1849 at the age of 80. This remarkable man had achieved a great deal during his long and stormy career. His hist. bears the records of many treacherous deeds and violent scenes of bloodshed, but he was, in spite of all, a wonderful, strong, and interesting character. Among the really good things he accomplished for E. were the fostering of the cotton industry in the delta and the conquest of the Sudan.

His son Ibrahim being dead, Abbas I, Mehemet's grandson, ruled. During his

reign the railway from Alexandria to Cairo was commenced at the suggestion of the Brit. Gov. Abbas was murdered by his own slaves after only 6 years' rule. He was succeeded by Said, the 4th son of Mehemet. During his rule Ferdinand de Lesseps obtained the concession (1856) for the construction of the Suez Canal (q.v.). The Eng. secured the right to start the Telegraph Company and estab. the Bank of E. The national debt was commenced under Said; he *d.* in 1863. Ismail, who succeeded him, did a great deal to reorganise the gov., but his extravagance landed him in bankruptcy; he sold his shares in the Suez Canal to the Brit. Gov., thereby paving the way for the international control of the khedive's affairs. He was compelled to submit to a constitutional ministry, of which he soon found means of getting rid. Ismail was immediately deposed by the sultan, and his son, Tewfik, succeeded him as khedive. In 1879 the Eng. and Fr. re-estab. the constitution; Maj. Sir Evelyn Baring (afterwards Lord Cromer) and M. de Blignyères represented the 2 countries. A movement now began among the Arab troops to remove the foreigners; it was led by a fellow officer, calling himself Ahmed Arabi. This man was promoted and made under-secretary for war, and then member of the cabinet. Arabi possessed a gift of rough eloquence, which appealed to the people; it is probable that he was sincere at heart but an unconscious tool in stronger and more unscrupulous hands. At the instigation of an Arabiac faction, a massacre took place in Alexandria, 1882, and, fearing a serious revolt, the Brit. and Fr. fleets arrived. The forts were bombarded, but the nationalist movement prepared to resist with great determination. The Brit. Gov. decided to employ military force. The Fr. declined to share the responsibility and England acted alone. Troops were landed under the command of Sir Garnet Wolseley, and the revolt was crushed at the battle of Tel-el-Kebir. The khedive returned to Cairo, and a fresh ministry was formed. Arabi was sentenced to death, but his life was spared and he was banished. The task of restoring the country to order fell to Lord Dufferin, the high commissioner, and the practical carrying out of this general scheme was undertaken by Sir Evelyn Baring (Lord Cromer), who was appointed consul-general in 1884. The Sudan now claimed the immediate attention of the country. A religious rebellion had broken out led by a fanatic calling himself a Mahdi of Islam. Col. Wm Hicks Pasha had been sent with 10,000 men to suppress the revolt, but was utterly defeated at the battle of Obeid in 1883. The khedive wished to make another attempt to regain his lost prov., but Sir Evelyn Baring insisted that, there being neither men nor money, the Sudan must wait. The Mahdi was now master of the chief part of the Sudan, though Khartoum and some other places (q.v.) still held out. Gen. Valentine Baker, with an army of 2500 mixed troops, was sent by the khedive to relieve Sinkat and

Tokar; they were defeated with great loss, and Suakin was in grave danger. A Brit. force of 4400 was sent and concentrated at Suakin. Sinkat fell, and Tokar surrendered to the Mahdi. Gen. Gordon and Col. J. D. Stewart, who had been sent by the Brit. Gov. to Khartoum to discover the best method of evacuation, were now entirely cut off from help and besieged in Khartoum, and the problem was how to extricate them. There was a long delay, due to various causes. Gen. Gordon was only provisioned for 5 months; the siege began on 18 Mar. 1884, and held out till Jan. 1885. Sir Charles Wilson, arriving on 28 Jan., found Khartoum in the hands of the enemy and Gen. Gordon murdered 2 days before. Lord Wolseley's Nile expedition, though failing in its ultimate purpose, experienced some severe fighting, and won the battles of Abu Klea and Metemmeh, etc. The Brit. troops were withdrawn in June, and the Mahdi *d.* before the rearguard had left Dongola.

During this time Sir Evelyn Baring was fighting the internal difficulties of E., the question of finance being the hardest to overcome. The Convention of London (1885) enabled E. to raise a loan of £9,000,000. In 1892 the Khedive Tewfik *d.*, and his son Abbas Hilmi succeeded. During this time the Khalifa Abdullah-el-Taishah succeeded the Mahdi and ruled the Sudan. His intention was to conquer E., and though delayed at first by trouble with Ethiopia and various massacres of Egyptians, he arranged his campaign and placed Wad-en-Nefumil, the Dervish Amir (who had defeated Hicks Pasha), in command of the army that was to conquer E. Another large portion of the army under Osman Digna, once a slave-dealer of Suakin, and now one of the greatest generals under the khalifa, was engaged in fighting the Ethiopians. Osman Digna was defeated with great slaughter and fled to Kassala. In 1886 Col. Kitchener seized Osman Digna's stronghold, but Osman himself escaped. Kitchener became governor of Suakin in the same year and sirdar of the Egyptian Army in 1890. It was not until 1898 that the power of the khalifa was broken. The battle of Omdurman marked the destruction of the khalifa's rule. Kitchener marched to Omdurman, driving the enemy back as he went. Among the many deeds of gallantry that occurred must be mentioned the famous charge of the 21st Lancers. They were surprised by 2000 Dervishes but cut their way through with heavy loss. During the battle over 10,000 Dervishes were killed and as many wounded; 5000 were taken prisoner. The black flag of the khalifa was captured and sent to Queen Victoria. The result of this victory was the extinction of Mahdism and the recovery of the Sudan for E. The khalifa fled. On the sirdar's return he encountered the Fr. expedition at Fashoda under Capt. Marchand. Matters were diplomatically arranged, though the crisis became very acute. Capt. Marchand returned to France. The khalifa was killed in an encounter in 1899,

and his son surrendered. Osman Digna was captured at Yebel Warriba in 1900.

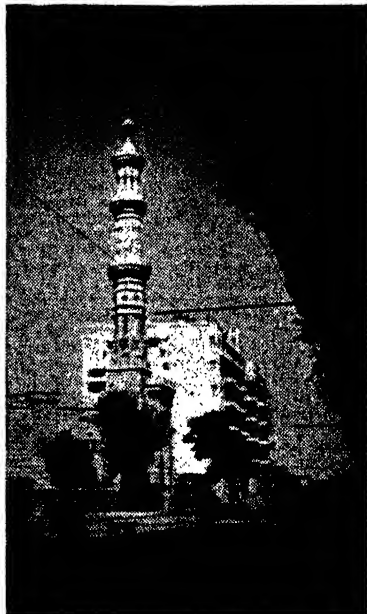
Meanwhile the country of E. continued to increase in prosperity. In 1907 Sir Evelyn Baring (now Lord Cromer) resigned, having completed his great work of creating from the ruins of hopeless misrule and ignorant tyranny a country that was steadily progressing and prospering. Sir Eldon Gorst succeeded him. The Anglo-Fr. agreement of 1904 put an end to the foreign complications attendant on the somewhat anomalous position of Great Britain; it recognised the protection and occupation.

The resignation of Sir Eldon Gorst in 1911 was followed by the appointment of Lord Kitchener as Brit. agent and consul-general. Kitchener's administration was marked by great personal prestige, and the policy of his predecessor was to a certain extent reversed. The cry of 'Egypt for the Egyptians' was not quite so insistent, and any measure of independence which Egyptian ministers had previously enjoyed was quietly but firmly withdrawn. The Brit. officials were again ensconcing themselves in administrative posts, and strange as it may seem, these actions seemed to pass without demur on the part of the Egyptians.

The First World War interrupted Kitchener's activities in E. and on 6 Aug. 1914 he became secretary of state for war. Great Britain declared war on Turkey on 5 Nov. This was followed on 18 Dec. by Great Britain declaring E. to be a Brit. protectorate: the khedive was deposed and his uncle, Hussein Kamil, was proclaimed sultan of E. Sir Henry MacMahon, who had rendered political service in India, but was without experience of E., was made high commissioner. In 1916 Sir Henry MacMahon was succeeded in the high commissionership by Sir R. Wingate, governor of the Sudan and sirdar. On 9 Oct. 1917 the sultan Hussein Kamil (or Kamel, q.v.) *d.*, and was succeeded by his brother Ahmed Fuad. During the following year an armistice between Turkey and the Allies was proclaimed, to be followed on 11 Nov. by the armistice between the Allies and Germany. (For the campaign in Egypt, *see* EGYPT, FIRST WORLD WAR CAMPAIGN IN.)

Following the First World War there was a natural resurgence of nationalism led by Saad Zaglul Pasha, an able man of humble origin and a former minister of education and minister of justice, who led a deputation to the high commissioner asking permission to send an Egyptian delegation to London to discuss Egyptian affairs. The request received the backing of Sir R. Wingate, but was refused in somewhat curt terms by the Foreign Office. A carefully worded reply by Zaglul, in which the request was renewed, was also rejected. This refusal determined Zaglul, and early in 1919 he announced the Nationalist programme at a public meeting. This programme demanded no less than complete independence for E. The Brit. Gov. had acted against the advice of its own high

commissioner, Sir R. Wingate, who on account of the advice he had tendered was recalled. The next stroke was the banishment of Zaglul with 3 other prominent Nationalists to Malta, and this was the occasion of rioting and strikes. The Brit. troops were called out, but the riots spread, and on 18 Mar. at Deirut a train was attacked, and 2 Brit. officers, an official, and 5 soldiers were murdered.



E. Buchanan

A STREET IN CAIRO

For these murders about 30 people paid the extreme penalty on 9 April. Gen. Allenby (q.v.), who had been appointed special high commissioner, succeeded in restoring order, and Zaglul and his fellow-exiles were allowed to return to E.

Acting on the recommendation of Gen. Allenby, the Brit. Gov. proclaimed the end of the Brit. protectorate, and E. was recognised as an independent sovereign state (28 Feb. 1922). This proclamation was subsequently ratified by the Brit. Parliament, which reserved the 4 following points for a later settlement: (1) security of communications between various parts of the Empire; (2) defence of E. against foreign attack; (3) protection of European interests; (4) the Sudan. The Sultan Ahmed Fuad became King Fuad I (q.v.). On 19 April 1923 the constitution of the kingdom of E. as an hereditary constitutional monarchy was proclaimed.

On 19 Nov. 1924 Gen. Sir Lee Stack, Governor-General of the Sudan, was assassinated by Egyptian Nationalists at Cairo. The Brit. Gov. insisted on the withdrawal of detachments of Egyptian troops from the Sudan. In Oct. 1925 Lord Lloyd was appointed high commissioner by the Baldwin gov. and held office till his recall by the Labour gov. in 1929.

In Aug. 1936 an Anglo-Egyptian treaty of alliance was signed, providing for the estab. of a Brit. garrison for a period of 20 years, and Britain's special interest in the Suez Canal zone was recognised. When the Second World War broke out E. loyally fulfilled this obligation, as was shown by the disembarkation at Alexandria of the Australian and New Zealand expeditionary force in the early part of 1940. The capitulations were abolished by the Convention of Montreux of 8 May 1937, the U.K. recognising that the responsibility for the lives and property of foreigners in E. devolved upon the Egyptian Gov. The treaty was ratified by the Egyptian Chamber by an overwhelming majority (202 votes to 11) and by the Senate (108 votes to 7).

During the war Germany and Italy made every effort to persuade E. to betray Britain, but E. as a whole stood firm by her obligations. But an acute crisis arose in Feb. 1942. Hussein Sirry Pasha, the Premier, and a good friend of Britain, had no following in the country and was powerless to suppress a strong clique of intriguers who were stirring up anti-Brit. feeling. King Farouk then called in Mustapha el Nahas Pasha, leader of the Wafd. Nahas's first step was categorically to declare his determination to carry out the terms of the treaty, in the negotiation of which he himself had been the country's leader in letter and spirit. The country now drew inspiration from its new-found unity and responded with a will to its leader's example. This sentiment was vitally necessary a few months later. Until the end of June 1942 there had been no definite threat to E. proper, although in 1940 the forces of Marshal Graziani had reached Sidi Barrani. But at the beginning of July 1942 Gen. Rommel's forces were actually marching on the Nile delta, and for some days the military position was precarious. In such a situation an E. hostile to Britain would vastly have increased the danger from Rommel's Afrika Korps. E. was the base of the famous Eighth Army (q.v.). (For the issue of the campaigns in E. and Cyrenaica see under AFRICA, NORTH, SECOND WORLD WAR (CAMPAIGNS IN.)) Rarely can any international undertaking have paid such solid dividends as the Anglo-Egyptian Treaty. Had there been no treaty, had not Anglo-Egyptian relations been so regularised, E. could not but have taken advantage of Britain's pre-occupations to further her own interests. On the other hand, a treaty which demanded more of E. than it in fact did might well have defeated its own ends. Criticism of E. for not taking an active military part is misconceived. E. duly

severed diplomatic relations with the Axis (q.v.), but she was not obliged under the treaty to make active war upon Britain's enemies; nor, indeed, was the Egyptian Army in a condition to measure its strength against the Italians, much less the Germans. Moreover, it was an open secret that some of the Egyptian Army leaders with good connections in the palace favoured the Axis, whose political principles appealed to them more than those of the W. democracies. Indeed, it was from the palace that came the chief opposition to cordial co-operation with the Allies throughout the war. The crisis came in 1942 when the Brit. Eighth Army had just been driven back for the second time across the borders of Tripolitania, the Japanese seemed to be all-conquering in the Far E., and Russia at bay at Stalingrad. It was then that the Brit. ambas. (Sir Miles Lampson, afterwards Lord Killarn) demanded an audience of King Farouk and supported his demands by surrounding the Abdin Palace with Brit. troops. It was on the ambassador's insistence that the king summoned to the premiership Nahas Pasha, leader of the largest political party, the traditional upholders of national independence. The demand might therefore seem to have been inexplicable, but Nahas had signed the treaty and it was calculated, and rightly, that of all E.'s politicians he might be most relied upon to uphold its terms. Nahas continued in power for the ensuing 2 years, in face of increasing political and economic difficulties, until a scandal involving public charges of corruption, sensational even by Middle E. standards, gave the king an opportunity to dismiss him and his party. Nahas was replaced by the Saadist party leader, Ahmed Maher, who was murdered a few months later after declaring war on the Axis.

In Dec. 1945 the Egyptian Gov. demanded a revision of the 1936 treaty on the plea that it had been made in the midst of an international crisis and that the war had exhausted the treaty's prin. objectives. It was also averred that the presence of foreign troops, even though stationed in distant areas, was wounding to national dignity and could only be interpreted by public opinion as a tangible sign of mutual mistrust. The Egyptian note said that E. would shrink from no sacrifice in order to place her military potential in a state enabling her to repel aggression pending the arrival of the reinforcements of her allies and of the U.N. (q.v.). The Brit. Gov. was willing to revise the treaty arrangements 'in the light of their mutual experience and with due regard to the provisions of the United Nations Charter.' This exchange of notes followed months of growing agitation by most sections of politically-conscious Egyptian opinion for the withdrawal of Brit. troops. On 23 Sept. 1945 the cabinet of Nokrashy Pasha took the extreme step of issuing a communiqué calling for evacuation of Brit. troops and for the incorporation of the Sudan with Egypt. Two months earlier even

Nahas Pasha had presented similar demands to the Brit. ambas. on his own initiative. On 12 Nov. 1945 King Farouk, in his speech from the throne on the opening of Parliament, repeated the demand for 'an end to all restrictions on Egyptian independence'. In the first fortnight of Feb. 1946 students—E.'s professional demonstrators—staged anti-Brit. demonstrations in Cairo and Alexandria. There were collisions with the police and in the result Nokrashy's gov. resigned. As his successor the king chose Ismail Sidky Pasha (q.v.), a doyen of Egyptian 'big business' and wealthy elder statesman. His return did not please the young Nationalists or the nascent Egyptian Labour movement. The climax came on 21 Feb. with riots in Cairo. Brit. service clubs and institutes were attacked and looted. Brit. troops opened fire on the mob and some 20 Egyptians were killed. The Brit. Gov., angered at the failure of the Egyptian authorities to protect Brit. property and personnel, demanded compensation and the punishment of the guilty. The Egyptian Gov. conceded the demands in principle and their new-found firmness had at least the effect of restoring order in the cap. Although the fiercer front shown by Sidky Pasha kept the cap. reasonably quiet, in Alexandria there was a violent outbreak on 4 Mar. in which, for the first time, Brit. lives were lost. In Jan. 1947 the Egyptian Gov. broke off negotiations, and later appealed to the Security Council of the U.N. to instruct Britain to withdraw troops from E. and the Sudan and the existing administrative regime in the Anglo-Egyptian Sudan. The Security Council, however, did not make any recommendation. Nevertheless the Brit. Gov. evacuated its troops from Alexandria and Cairo early in 1947.

E. was involved in the Arab-Jewish struggle over the partitioning of Palestine, which was recommended in Nov. 1947 by a committee appointed by the General Assembly of the U.N. The Arab League refused to recognise partition and, following the termination of the Brit. mandate in Palestine, Egyptian troops invaded Palestine in the S., while the Transjordan Arab Legion and Syrian and Lebanese troops invaded the country in the N. and E. (May 1948). A truce supervised on 11 June, by which date the Egyptian Army had reached Isdud, 20 m. S. of Tel Aviv, and occupied positions running S.E. from Majdal through Fuluja to Beersheba and linked up with the Arab Legion at Bethlehem. When hostilities were resumed the Arabs sustained sev. defeats and accepted a renewal of the cease-fire (19 July). Israeli troops then decided to take the offensive against E. and a large Egyptian force was surrounded at Fuluja, 20 m. N.E. of Gaza. E. then became the sole target of Israeli pressure. Israeli troops entered Egyptian ter. in Dec. but were driven back and a truce was finally arranged for 7 Jan. 1949, a general armistice being signed at Rhodes on 24 Feb. (see further under PALESTINE).

In July 1952 there was a revolt against the palace; a *coup d'état* resulted in the abdication of King Farouk, and for a short while his infant son, Ahmed Fouad II, reigned. Ex-King Farouk left E. without any apparent regret on the part of his erstwhile subjects, and the abandoned and confiscated property of the royal family, valued at £E6,000,000, provided a welcome windfall to the exchequer. In the following June (1953) Gen. Mohammed Neguib, who had precipitated the abdication of Farouk, proclaimed E. a rep. with himself as president and Prime Minister. In less than a year (April 1954) he was compelled to resign his official offices by the Revolutionary Council (14 Nov.) and ceased to be president. A council of ministers carried on the affairs of state until early in Mar. 1956, when a gov. was formed with the Prime Minister Lt.-Col. Gamal Abdel Nasser, who has since become president, as virtual head of the State. In Dec. 1955 it was announced that the U.S.A. and the U.K. would give E. financial support for the construction of the proposed high dam at Aswan. There were formal qualifications regarding ratifications by the govts. concerned. Further sums of money in support of the project were expected, and indeed assured, by the World Bank. The initial sum of money involved was estimated at \$1,300,000,000. In July 1956 the offer of financial assistance was suddenly withdrawn by both the U.S.A. and the U.K. as 'not being feasible in the present circumstances'. It is still a matter of conjecture what precisely were the 'circumstances' referred to, but it may be assumed that they were associated with E.'s acceptance of military equipment and military advice from the Communist bloc and the president's changing rôle from that of a conventional president to that of a dictator. Nasser's reaction was violent and decisive. On 26 July, at Alexandria, he announced that the Egyptian Gov. had nationalised the Suez Canal Company.

The seizure of the canal was regarded as illegal in W. Europe and the U.S.A., but it was soon obvious that no effective joint action by the protesting states against E. was possible. The Suez Canal Users' Association, set up after the seizure, proved powerless. Only in Britain and France was there any serious demand for stern action against E. Then in Oct. 1956 hostilities broke out once again between E. and Israel. Israel, undoubtedly provoked by E.'s increasingly hostile attitude, invaded Egyptian ter.; France and Britain called on both belligerents to cease fighting. E. ignored the ultimatum, and in consequence a joint Anglo-Fr. force invaded E. from the air and, without more than a token defence by the Egyptian Army, occupied Port Said. The Egyptian Air Force suffered crippling destruction on the ground, and there was little evidence of any organised resistance to the allied force, which could probably easily have occupied the whole length of the canal. The Anglo-Fr. action resulted in E.'s

blocking the Suez Canal and making it impassable: the very thing which Britain and France had acted to try to avoid. World opinion, with which both the U.S.A. and Russia concurred, was ranged against this use of force by the U.K. and France, and W. influence in the Middle East was destroyed as the result of their action. Meanwhile, Israel had advanced into the Sinai desert with the avowed purpose of destroying Egyptian strong points and other places from which raids into Israeli ter. were frequently taking place. In this invasion Israel was technically the aggressor. Again there was a total collapse of E.'s defence force.

The Anglo-Fr. forces had as their main objective, so the respective govts. proclaimed, the protection of the Suez canal, free navigation of which was threatened by the invading Israeli forces. In the event, Britain, France, and Israel were branded as aggressors at the U.N. and called upon to cease their military activities. A U.N. force was organised to safeguard the canal from further attacks and to prevent further outbreaks of violence between Israel and E. in Sinai. Serious opposition to the Brit. Gov.'s action by the Labour party, uneasy public opinion in the U.K., and veiled threats of intervention by Russia were all factors which contributed to a sudden halt of military operations in the canal zone. The blockships sunk by E. in the canal were later removed by engineers acting under orders from the U.N.

The apparent success of Nasser's policy in the U.N., the *fait accompli* of his seizure of the canal, the holding to ransom of the mercantile marine of all nations wishing to use the canal, and a demand for the payment of canal dues in advance and in convertible currency, all these factors more than outweighed the effect of E.'s defeat on every field of battle. Nasser's, and thus E.'s, prestige soared within the Arab world. E.'s dependence on the E. bloc became more real, and a general realignment of U.S.A. policy in the Middle East became necessary. One of the many consequences of the abortive Franco-Brit. venture was the confiscation of property owned by the nationals of these countries in E. Much hardship was caused; evacuation by the respective govts. was followed by deportations, and the long chapter of Anglo-Egyptian association brought to an unhappy close. See also COPTIC LANGUAGE AND LITERATURE; DEMOTIC WRITING; EGYPTOLOGY; HIERATIC WRITING; NILE; SUDAN; SUEZ CANAL.

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Egypt, First World War Campaign in. Although Turkey was not in a state of war with Great Britain until 5 Nov. 1914, she had been under Ger. influence for some years before the First World War broke out, and an alliance existed between the 2 countries. In Oct. 1914 Germany's fortunes were at a low ebb; she had lost the battle of the Marne, Russia had overrun E. Prussia, the Austrians had suffered heavily at Lemberg, and reinforcements to Brit. arms were moving freely from India and the dominions. The time had therefore arrived for Turkey to come into the arena of war and play her allotted rôle by striking at Britain through Egypt. The pre-war Brit. garrison was required in France, and in Sept. 1914 the 42nd (E. Lancs) Territorial Div. was sent out to replace it. Troops from India, Australia, and New Zealand also arrived, and by the end of 1914 about 70,000 troops were concentrated in E. Early in Nov. 1914 a Turkish force under Jemal Pasha advanced through the Sinai peninsula against the Suez Canal. Jemal's chief of staff was Col. Kress von Kressenstein, a Bavarian officer of great ability and energy. They advanced in 3 columns, and arrived at the canal on 25 Jan. 1915. Their strength was about 12,000-15,000 men. They raided Kuber, 7 m. N. of Suez, on 27 Jan., and Kantara on 28 Jan. On the night of 2-3 Feb. a general attack was made between Serapeum and Tussum, but was repulsed by gun-fire. All attempts to cross the canal failed. The next operations were against the Senussi (a Muslim nonconformist sect founded in 1835), who occupied the W. desert, with centres at Kufra and Siwa. The sect had many adherents in E. and was susceptible to Turkish propaganda. The Kaiser sent Sayed Ahmed, their leader, arms and munitions by submarines, which were landed on the coast of Tripoli. In Nov. 1915 they captured the crew of H.M.S. *Tara*, which had been torpedoed near Sollum, and committed other hostile acts against the Brit. This led Gen. Sir John Maxwell, the Brit. com-

mander-in-chief in this theatre, to take offensive action against them. Actions were fought at Hazalín and at Agadir in Dec. 1915 and Mar. 1916 respectively, in which the Senussi lost heavily. An armoured car detachment under the command of the duke of Westminster found 40 survivors of the *Tara* in a distant camp and rescued them.

When the Gallipoli Peninsula was evacuated the Brit. troops went to E., and the whole of the garrison was reorganised under Gen. Sir Archibald Murray. The total force amounted to 13 divs., 6 of which were sent to other theatres of war. A line to the E. of the Suez Canal was occupied, where a much-advertised Turkish advance was awaited. They were under the command of Kress von Kressenstein, and numbered about 18,000 men. By the middle of July 1916 they were in touch with the Brit. outposts. On the night 3-4 Aug. they attacked Romani, but, being heavily counter-attacked, fell back in disorder, having suffered 9000 casualties, 4000 being prisoners. The Brit. followed up this success and drove the Turks out of E., the Sinai Peninsula and eventually out of Palestine.

Egypt Exploration Fund, now E. E. Society, was founded in 1882 by Miss Amelia Edwards (q.v.), who was greatly interested in Egyptian antiquities, and who was one of its first secretaries. Indeed, she gave up her other literary work to devote her time to writing about Egypt, one of her books being *Pharaohs, Fellahs, and Explorers*. The object of the society is to make surveys, explorations, and excavations at ant. sites in Egypt, and to publish the results. Some of the distinguished men who have worked for it are Flinders Petrie, F. L. Griffith, N. de G. Davies, B. P. Grenfell, and A. S. Hunt.

Egyptian Bean, name sometimes given to the bean-like fruits of *Nelumbo nucifera*, the sacred Lotus, now found only in Asia and Australia. The seeds are eaten in some parts of India, and are believed to be the *beans* which Pythagoras forbade his disciples to consume.

Ehrenbreitstein, Ger. tn in the Land of North Rhine-Westphalia (q.v.), on the r. b. of the Rhine (q.v.) opposite Koblenz. Until 1919, in which year it was demilitarised in accordance with the treaty of Versailles (q.v.), it was called the 'Gibraltar of the Rhine.' Its historic fortress, situated on an almost inaccessible rock 387 ft. high, is believed to date from the time of the Emperor Julian (q.v.), and has been many times reconstructed and added to. In the 11th cent. it was in the possession of a noble called Erembert, from whom its name is derived, and in the 12th cent. it was in the possession of the archbishop of Trier. The tn was taken by the Fr. in 1631, by the Imperialists in 1637, and again by the Fr. in 1799. Pop. 3000.

Ehrenburg, Il'ya Grigor'evich (1891-), Russian writer of Jewish origin. He lived many years abroad, mostly in Paris, both before and after the revolution, and

has many features of a Montparnasse *bohémien*. Starting as a Symbolist poet, he soon turned to prose and has written in all genres, from novel to newspaper reporting; most of his writing is a kind of fictionalised Journalism. A cynic and nihilist, he has always ably mirrored the prevalent mood of his milieu—the patriots' gloom at the sight of Russia's agony under the rule of Bolshevik barbarians (*A Prayer for Russia*), the acceptance of revolution by the National Bolsheviks (*Meditations*, 1921), the repulsion to both capitalism and regimented Communism felt by many intellectuals (*Julio Jurenito*, 1922), the complex emotions created by industrialisation (*The Second Day*, 1933), the hatred of Germans (*The War*, 1943), the post-war anti-W. party line (*The Storm*, 1948), the post-Stalin 'thaw' (*The Thaw*, 1954-6), etc.

Ehrlich, Paul (1853-1915), Ger. chemist, b. Strehlen, Silesia. His first notable discovery was of 'tri-acid stain.' At the Koch Institute, Berlin, his standardisation of antitoxins won for him the appointment in 1906 as head of the Institute for Experimental Therapeutics, Frankfurt-on-Main. His chief discovery was of Salvarsan as a remedy for various diseases, including syphilis, made in conjunction with the Jap. doctor S. Hata. He shared the Nobel Prize for medicine with Metchnikoff in 1908. See M. Marquardt, *Paul Ehrlich* (Eng. trans.), 1949.

Elbar, Sp. tn in the prov. of Guipúzcoa, famous for its damascened 'Elbar work.' Pop. 14,150.

Elbenstock, Ger. tn in the dist. of Karl-Marx-Stadt, 27 m. SW. by S. of Karl-Marx-Stadt (q.v.). It is in the Erzgebirge (q.v.), near the Czechoslovak border, in a tungsten and uranium mining area. It is known for its embroidery. Pop. 9000.

Eichendorff, Joseph, Freiherr von (1788-1857), Ger. poet, b. Lubowitz, one of the most famous of the Ger. Romantics. His chief romance is *Aus dem Leben eines Taugenichts*, 1826, and his chief dramas are *Ezzelin von Romano*, 1828, and *Der letzte Held von Marienburg*, 1830. He is best known, however, as a lyric poet. His language is simple and musical; his poems convey a profound sincerity, and seem the spontaneous expression of a serene mind. E. achieves a rare harmony between language and thought. Some of his poems have been set to music by Schumann, Mendelssohn, and Wolf. Among his best poems are those expressing his longing for nature: *Durch Feld und Buchenhallen*; *In einem kühlen Grunde, da geht ein Mühlenrad*; *Wenn Gott will rechte Kunst erweisen*. See J. Nadler, *Eichendorff's Lyrik*, 1908; H. Brandenburg, *Joseph von Eichendorff*, 1922; W. Köhler, *Eichendorff*, 1937.

Eichhorn, Hermann von (1848-1918), Ger. soldier, b. Breslau. Won the Iron Cross in the Franco-Ger. war of 1871. In the First World War he served throughout on the Russian front. He came into prominence as one of Hindenburg's chief lieutenants in the E. Prussian campaign, in which he took a notable part in the

2nd battle of the Masurian Lakes (Feb. 1915). As commander of the Tenth Army he directed the operations against the Niemen, and was in command of the forces which captured the important stronghold of Kovno in Aug. 1915, whereby the Russians were compelled to abandon Brest-Litovsk and the whole of Poland. In 1918 he was made field-marshal and Ger. commandant in the Ukraine. Bombed in the streets of Kiev by social revolutionists, he d. of his injuries.

Eichhorn, Johann Gottfried (1752-1827), Ger. scholar, b. Dörrenzimmern. In 1788 he was made prof. at Göttingen, where he lectured both on oriental languages and on political economy. He was one of the first to subject the Gospels to the ordinary methods of literary criticism, and is important as one of the first rationalist critics of the Bible.

Eichstätt, or Eichstadt (formerly **Eistet**), Ger. tn in the *Land of Bavaria* (q.v.), in the deep, rocky valley of the Altmühl (q.v.), 54 m. NNW. of Munich. Its bishopric was founded by St Boniface (q.v.) in the 8th cent., from which century dates its shrine of St Walpurga (q.v.), sister of St Willibald (q.v.). The beautiful cathedral is partly 11th cent.; and there are sev. fine baroque buildings, and a massive Renaissance fortress (now a museum). Pop. 12,000.

Eider, riv. of Germany in Schleswig-Holstein (q.v.), which forms the boundary between Schleswig and Holstein. It rises SW. of Kiel, and flows N. and then generally W., on a very winding course, to the North Sea at Tönning. It is navigable as far as Rendsburg, and from here is connected with the Baltic by the Kiel canal. Length 117 m.

Eider-Duck, popular name of a species of *Somateria* of the duck family Anatidae. They inhabit N. regions and are to be found on the coasts of the Atlantic and Pacific. The commonest species, *S. mollissima*, is occasionally found in Britain in the breeding season. The bill and feet are olive green, and the down is much valued in commerce for stuffing quilts and cushions. Other well-known species are *S. spectabilis*, the king E., which furnishes most of the down exported from Greenland; *S. stellerti*, known as Steller's E.; *S. fischeri*, the spectacled E. The common E. nests on rocky is. near the shore from the Farne Is. to Spitzbergen and is protected in Norway and Iceland.

Eidograph (Gk *eidos*, from *graphein*, to write). This is a machine which is often used instead of a pantograph, and is employed for copying drawings, maps, and plans on the same scale, or for enlarging or reducing them in any proportion.

Elfel, volcanic plateau in Germany, in the *Land of Rhineland-Palatinate* (q.v.), stretching from the Belgian frontier to the Rhine and Moselle (qq.v.). The heights reach from 1500 to a little more than 2000 ft, and the surface is generally undulating, with ridges and well-wooded valleys. The plateau is composed principally of Devonian rocks and limestone, with numerous fossils.

Eiffel, Alexandre Gustave (1832-1923), Fr. engineer, b. 15 Dec., at Dijon. Studied at the Ecole Centrale for 3 years. His first work was the construction of the iron bridge over the Garonne at Bordeaux, where he worked his 'caissons' with compressed air. The bridge over the Douro at Oporto, the viaduct of Garabit, as well as other metal bridges, are also his work; and it was he who designed the immense locks for the Panama Canal. His best-known work is the E. Tower, on the completion of which in 1889 he was made an officer of the Legion of Honour. In 1907 he pub. *Recherches expérimentales sur la résistance de l'air, exécutées à la Tour Eiffel*. Later he made experiments in aeronautics, on which he pub. 2 books and also a report in 1919, and, in 1920, *L'Idée aérienne*.

Eiffel Tower, iron structure which stands in the Champ de Mars, Paris, on the S. bank of the Seine. It was designed



E.N.A.

THE EIFFEL TOWER, FROM THE SEINE

for the Paris Exhibition of 1889 by Gustave Eiffel (q.v.) and was erected 1887-9. It consists of 3 stories or platforms, the platform of the summit being 985 ft above the ground. Almost 7500 tons of iron were used in its construction. The ascent to the top is made by powerful electric lifts. The tower is an important wireless telegraphy, broadcasting, and television station, and meteorological centre.

Eiger (Ogre), mt of Switzerland, in the Bernese Oberland; height 13,042 ft. First ascent 1858. Its immense N. face, which towers above Grindelwald, was one of the last great unsolved climbing problems in the Alps, until it was scaled by an Austro-Ger. party in 1938.

Eigg, or Ege, Island, is. belonging to the Hebrides, W. Scotland, situated 5 m. SW. of Skye. It has an area of 12 sq. m. The S. extremity, called the Scaur of Eigg, is a remarkable basaltic cliff, reaching 1546 ft in height. In one of the caves 200 of the Macdonalds were suffocated by the Macleods. Pop. (with Rùm) 215 (1951).

Eight, Piece of, popular name given to an old Sp. silver coin. It was divided into 8 silver reals, hence the term P. of E. Other names for it were *plastre* or *dollar*. Its value was about 4s. See METROLOGY.

Eight Hour Law, Act passed by Congress in 1868 limiting the hrs of daily service of labourers and mechanics employed upon work done for the U.S.A. or for any Ter. or for the Dist. of Columbia to 8 hrs.

Eight Points, see ATLANTIC CHARTER.

Eighth Army, formed in Nov. 1941, of the Brit. forces in the W. Desert, thus carrying a stage further the reorganisation under which the Middle East forces were divided into a W. Army (Egypt and the W. Desert) and an E. Army (Palestine and Syria); the creation of the E. A. separated the Brit. forces in the W. Desert from those in Egypt and was in fact a new incarnation of the Army of the Nile or Desert Army which, under the command of Matland Wilson and the supreme direction of Wavell, won the first great victory over the Italians in the W. Desert. Under Sir Alan Cunningham the E. A. launched its own first offensive against the Axis forces on the Egyptian frontier on 18 Nov. 1941. But if the Brit. victory was indecisive the battle ended in Jan. 1942 with Tobruk relieved, the Axis frontier garrison destroyed, and Rommel's (q.v.) mobile Afrika Korps hurried back to the Gazala line. But Rommel's attack in the following May brought a reversal of fortune. His superior armour won a decisive victory over Ritchie, who had taken command in the middle of the previous battle, and Tobruk was lost and Rommel's Axis Army advanced to Alamein and threatened Egypt. But Auchinleck, assuming personal command of the weakened remnants of the E. A., brilliantly averted disaster. The way to Alexandria was barred still more securely at the end of Aug. when Rommel launched a great offensive against the Alamein line; for under its new commander, Montgomery, and commander-in-chief, Alexander, the E. A. hurled the Axis back in the now classic battle of El Alamein. In the first week of Oct. the E. A. launched its most famous offensive, driving the Afrika Korps right across Libya, Cyrenaica, and Tripolitania. It broke the Mareth Line and entered Tunisia to co-operate with Anderson's First Army and the Amer. forces already there in shattering Axis resistance and completely destroying the last armies of the enemy in Africa.

For the Brit. Empire El Alamein was the turning-point of the Second World War. The battle proved not only the first great engagement lost by Germany, but the means to a succession of Allied victories across Africa and S. Europe. In the E. A. were men from almost every part of the Brit. Empire and they were welded together by superb training into a supremely efficient and confident military formation. Together with the Americans and the Brit. First Army they were the first Allied troops to assault the fortress of Europe. Among the divs. of the E. A. that invaded Sicily there were only 2 from the old Desert Army, and Canadian regiments had now joined it. But the spirit and tradition which had brought the E. A., after bitter disappointments, on its triumphal advance of 2000 m. under Montgomery were the same, and the Crusaders' Cross still remained their proud badge. In Sept. 1943 the E. A. landed on the It. mainland and by Christmas they were N. of the Rome line. Its constitution had now become not merely imperial but international. The original design of this campaign was that the E. A. should draw Ger. divs. down to the S. while the Amer. Fifth Army landed at Salerno. Later the task was to hold as many of Kesselring's Ger. divs. as possible in Italy in order that the Allied armies on the W. Front should have fewer to overcome. Combined movements of the E. A. and the Fifth brought about the fall of Rome 2 days before the Allied invasion of Normandy in June 1944. The E. A., under the immediate command of Lt.-Gen. Leese and Field-Marshal Alexander's supreme command, moved from the Adriatic to the Cassino front unsuspected, then drew most of the Ger. troops eastward and so enabled the Fifth to break through the Gothic Line. In the spring of 1945 the E. A. opened the offensive with a magnificent start in which, besides Brit., New Zealand, and Indian troops, Polish and It. units shared. The swift success of this advance brought the E. A. to Trieste and into Austria and so to the close of its famous career. In the course of nearly 4 years its constitution repeatedly changed. The Australians who had served early in its hist. returned to their own land to meet the Jap. menace. Some of the Brit. and Indian troops also went E. From Italy divs., including the famous 'Desert Rats'—the 7th Armoured Corps with a desert rat for its emblem—were withdrawn to take part in the invasion of France in the Twenty-First Army Group. Later its Canadian corps was also sent to France. See: H.M. Stationery Office, *The Destruction of an Army, 1942, The Battle of Egypt, 1943, and The Mediterranean and the Middle East*, Volume II, 1956; R. J. Crawford, *I was an Eighth Army Soldier*, 1944; Viscount Montgomery, *El Alamein to the River Sangro*, 1948. The E. A. H.Q. was disbanded in July 1945. See also AFRICA, NORTH, SECOND WORLD WAR, CAMPAIGNS IN; ITALIAN FRONT IN THE SECOND WORLD WAR.

'Eighth (8th) Army News,' see ARMY NEWS SERVICES.

Eighth United States Army, activated on 10 June 1944 at Memphis, Tennessee, with staff drawn almost entirely from the Second Army. Lt-Gen. Robert L. Eichelberger assumed command on 7 Sept. 1944. In the first 7 months of 1945 the E.U.S.A. cleared the Southern Philippines and set up bases on Leyte which equipped and supplied major units for Luzon and Okinawa. E.U.S.A. occupation of Japan, begun on 30 Aug. 1945, was extended to responsibility for all ground forces in Japan on 1 Jan. 1946. At peak strength this force consisted of 5 corps, 11 divs., 3 regimental combat teams, and hundreds of smaller units—a total of 250,000 men. Lt-Gen. Walton H. Walker succeeded Gen. Eichelberger on 3 Sept. 1948. The Brit. Commonwealth Occupation Force, which arrived in Japan in Mar. 1946, comprised the equivalent of another corps, and was under the operational control of the E.U.S.A. At the beginning of the Korean War, on 28 June 1950, no U.S. combat units were in Korea; the 4 divs. of the E.U.S.A. then in Japan were untried troops, but they were committed and joined battle at Osan. Gen. Walker's E.U.S.A. was reinforced by additional U.S. divs. The Rep. of Korea originally had 8 divs.; many S. Koreans, however, were integrated (100 to each company unit) with E.U.S.A. forces. Forced back to the Pusan perimeter, the U.N. forces eventually surged all the way to the Yalu R.

The U.N. Army, truly an international force, in Nov. 1950 consisted of troops of the Korean Rep., U.S., U.K., Australia, the Philippines, Turkey, Thailand. Later, troops from Canada, France, Greece, the Netherlands, Colombia, Belgium, Ethiopia, the Union of South Africa, and Luxembourg were added. Gen. Walker was killed on 23 Dec. 1950, and Lt-Gen. Matthew B. Ridgway (q.v.) succeeded to command of the E.U.S.A. The Chinese Communists entered the war in force on 26 Nov. 1950, and U.N. troops were forced back across the 38th parallel. A renewed E.U.S.A. offensive in mid-Feb. recaptured Seoul by Mar. 1951. Gen. MacArthur was replaced by Gen. Ridgway. Lt-Gen. James A. Van Fleet took over the field forces; and Gen. Mark W. Clark was named commander of U.N. forces in Korea. The battle now resolved into bitter see-saw fighting that eventually resulted in a stalemate. The agreement on truce terms was signed on 8 Aug. 1953. The U.S. Defense Dept summary of army dead was 18,924; of wounded, 69,941; total battle casualties for all U.S. services were 126,726. On 18 Aug. 1954 the U.S. announced that it would withdraw 4 of its Eighth Army divs. from Korea, leaving 2. See *The Army Almanac*, 1950; Charles E. Dornbusch, *Unit Histories of World War II and Korea*; Kyung Cho Chung, *Korea Tomorrow*, 1956; *Korea 1950*, U.S. Gov. Office of Military History, 1952.

Eik, in Scots Law, is an additional confirmation (q.v.) in respect of estate omitted from that originally confirmed.

Elkon Basilike (*The Pourtraiture of His Sacred Majesty in his Solitudes and Sufferings*). This work was pub. immediately after the death of Charles I, and being written in the first person was ascribed to Charles himself. Gauden, later bishop of Worcester, claimed that he started the work about 1647, and submitted it to Charles, but those in favour of Charles's authorship say that he wrote the first 6 chapters before 1645, i.e. before the battle of Naseby.

Eildon Hills are 3 high hills situated near Melrose, Roxburgh, Scotland. The central peak rises to an elevation of 1385 ft. and commands a most magnificent view of the surrounding country. The remains of a Rom. camp are to be seen on one of the hills, and sev. legends are told concerning the hills. The poet Thomas the Rhymer is associated with them, and Scott remarked that, standing on the Eildons, he could point out 43 places famous in war and verse.

Eilenburg, Ger. tn in the dist. of Leipzig, near the Mulde, 13 m. N.E. of Leipzig (q.v.). It was very badly damaged in the Second World War. There is a ruined castle, and there are plastic and metal industries. Pop. 20,000.

Ellithya, or **Ilithya**, personification of the pains of childbirth, worshipped as the goddess of labour. But since moon-goddesses had influence over birth, she was identified at times with Artemis, Hera, and Aphrodite. Cretan legend said E. was *b.* at Knossos, whence her cult spread to Delos and Attica. Another version says she came to Delos to assist Leto. She is at times linked with the Fates, who also control childbirth.

Eimeo, see MOOREA.

Einarsson, Indridi (1851–1939), popular Icelandic dramatist, who invariably used Icelandic folklore or hist. for his themes. Some of his plays have been trans. into foreign languages, 2 of them into Eng. His autobiography, *Síð og líf* ('Seen and Experienced'), 1936, gives a vivid picture of life in Icelandic literary circles from 1870 to 1920.

Einarsson, Stefán (1897–), Icelandic scholar, prof. of A.-S. in the Johns Hopkins Univ. (q.v.), author of sev. important works in Eng., Icelandic, and German, on Icelandic language and literature, including a grammar for advanced students, and a *History of Icelandic Prose Writers 1800–1940*.

Einbeck, Ger. tn in the Land of Lower Saxony (q.v.), 40 m. S. of Hanover (q.v.). It grew up around the 11th-cent. monastery of St Alexander, and was later a member of the Hanseatic League (q.v.), and the seat of the princes of Grubenhagen. It was already known in the 14th cent. for its beer. Some of the old walls and watch towers remain, and there are fine anct churches and houses. Carpets and weaving machinery are manufactured. Pop. 18,000.

Eindhoven, industrial tn in the prov. of N. Brabant, Netherlands, on the R. Dommel, 19 m. ESE. of Tilburg. It is the site of the famous Philips works, manufacturers of incandescent lamps,

radio apparatus, television sets, etc., founded in 1891 and since expanded to a group of large factories. The pop. of E. has increased from 6000 in 1910 to 151,740 in 1954. Other manufs. are textiles, trailers, and cigars.

Einhard, Einhart, or Eginhard (c. 770-840), Frankish historian, the biographer of Charlemagne (q.v.), b. in E. Franconia. Owing to his extraordinary ability he came under the notice of Charlemagne at an early age. His artistic skill gained for him the name of 'Bezaleel,' and the basilica of Aachen, as well as other buildings, have been attributed to him. He became a confidant of the emperor, and on Charlemagne's death Louis, his son and successor, appointed E. tutor to his own son Lothair. His best work is *Vita Caroli Magni* (Eng. trans. A. G. Grant, 1905; H. W. Garrod, 1915), which is a splendid biography of Charlemagne and is perhaps the finest historical biography of the early Middle Ages. His authorship of *Annales Regum Francorum* is not certain.

Einsiedeln, tn in the canton of Schwyz, Switzerland, 25 m. S.E. of Zürich. It is the most famous pilgrim-resort in Switzerland, with a Benedictine abbey, founded about 934 on the site of the cell of St Meinrad, who was murdered in 861. It was dowered with land by 2 emperors, and became an independent principality of the Holy Rom. Empire. The church (1719-26) is 446 ft long, and is one of the most noble works of the baroque period. The abbey library comprises 100,000 vols., and 1300 MSS., some of the 8th to the 12th cents. The celebrated chemist Paracelsus was b. here in 1493. The reformer Zwingli (q.v.) was par. priest of E. 1516-18. Pop. 9000, Ger.-speaking Rom. Catholics.

Einstein, Albert (1879-1955), proponent of the theory of Relativity (q.v.), b. Ulm, Württemberg, son of Hermann E., a Jew, described as owner of electro-technical works. The family removed to Munich during the childhood of Albert, who was slow in learning to speak, shy, and unsocial, with a taste for music. His early education was Jewish at home, Catholic at school. When older he attended the Luitpold Gymnasium at Munich. In 1894 the family removed to Milan, and Albert began wandering tours in N. Italy. He wandered into Switzerland, and at Aargau studied mathematics and physics at the canton school. With a view to schoolmastering, he began studying at Zürich Technical School at the age of 17, and remained there 4 years. He afterwards acted as tutor at Schaffhausen and Bern. In 1901 he was naturalised a Swiss citizen; and he was engaged as a technical expert in the Patent Office at Bern, 1902-5. In 1903 he married a S. Slavonic student from whom he was afterwards divorced. In 1905 he pub. in the *Annalen der Physik*, papers on the production and transformation of light, the Brownian movement, molecular dimensions, and the electro-dynamics of moving bodies. The last-named brought him under the notice of Max Planck (q.v.). In

1909 he became prof. extraordinary at Zürich of Theoretical Physics; in 1911 prof. ordinary at Prague. In the autumn of 1912 he returned to Zürich as prof. at the Polytechnic. Early in 1914 he was appointed director of the Kaiser Wilhelm Physical Institute at Berlin, in which city he resided until 1933, when, owing to his Jewish origin, he was deprived of his appointment and took refuge in England. Later he went to America and became a prof. at Princetown, New Jersey. His second marriage was with a cousin of the same surname. By 1916 he had pub. *Die Grundlage der allgemeinen Relativitätstheorie*; followed by *Über die spezielle und*



Topical Press

ALBERT EINSTEIN

die allgemeine Relativitätstheorie, 1921. E. gave a new direction to thought on the propagation of light and allied subjects by pointing out that time and space are not absolute, but merely relative to the observer. He gradually overcame the great mathematical difficulties, and his work has affected that of all subsequent mathematicians and physicists. His theory was not verifiable experimentally until he applied it to gravitation, when he predicted that the deflection of a ray of light by the sun should be twice what the Newtonian theory would indicate. Observations made during the total eclipse of 1919 confirmed the E. theory. In Jan. 1921 he was lionised by philosophers and astronomers in U.S.A. and England. His predicted equivalence of mass (m) and energy (E) according to the relation $E = mc^2$, where c is the velocity of light, has been abundantly verified and is strikingly demonstrated in the production of nuclear power (q.v.) and the explosion of atom bombs (q.v.). His doctrine has invaded philosophical as well as scientific fields of thought. Newton's dynamics still suffice to a high degree of accuracy for

most practical purposes, but for ultimate physical concepts Newton's theory is superseded by E.'s. He has written books on other subjects, among them *About Zinism*, 1930; *Why War?* (with S. Freud), 1933; *My Philosophy*, 1934; *The Evolution of Physics* (with L. Infeld), 1938; *Out of my Later Years*, 1950; *The Meaning of Relativity*, 1950. See P. Frank, *Einstein, His Life and Times*, 1948.

Eindhoven, Willem (1860-1927), Dutch physiologist, b. Samarang, Java, and educ. at Utrecht Univ., where he qualified in medicine in 1885. In the same year he was appointed prof. of physiology at Leyden and held this chair until his death. He directed much of his research to the development and perfection of recording instruments, his most valuable work being in the improvement of the strong galvanometer (1901) which he adapted to portray the electrical changes occurring in the heart (1903). Through his work, modern electrocardiography became a reality. He also introduced phonocardiography (mechanical recording of heart sounds) in 1907. E. was awarded the Nobel Prize in 1924.

Eire, see IRELAND, REPUBLIC OF; and see ERIN.

Eisenach, Ger. tn in the dist. of Erfurt, at the W. end of the Thüringerwald (q.v.), 30 m. W. of Erfurt. It dates back to about 1065, and was founded by the Landgrave of Thuringia; later it passed into the hands of a Saxon family, and eventually, in 1741, it became the property of the duchy of Saxe-Weimar (see SAXE-WEIMAR-E.). There are sev. medieval churches, a 16th-17th-cent. tn hall, and an 18th-cent. ducal palace, now a museum. A statue of Martin Luther (q.v.) commemorates his sojourn in the tn, where he attended the Lat. school, 1498-1501. E. is popular as a spa and holiday resort, and has manufs. of machinery, motor vehicles, and chemicals. Johann Sebastian Bach (q.v.) was a native. Pop. 53,000.

Eisenberg, Ger. tn in the dist. of Gera, 12 m. NW. of Gera (q.v.). It was the cap. of the duchy of Saxe-E. 1680-1707, and went to Saxe-Altenburg (q.v.) in 1826. There is a 15th-cent. church, and a 17th-cent. palace (now the tn hall). Textiles, foodstuffs, and china are manufactured. Pop. 15,000.

Eisenerz, Austrian tn in the prov. of Styria. It is a mining tn at the foot of the Erzberg (5030 ft), which has the largest open-cast iron-ore deposit in Europe. There is an anct. Hussite church. Pop. 9700.

Eisenhower, Dwight David (1890-), Amer. soldier, 33rd president of the U.S., son of David J. E. of Swiss forbears who came to America before the Amer. Revolution, b. Denison, Texas, and spent his boyhood at Abilene, Kansas. Graduated from West Point in 1915.

In the First World War he was chiefly engaged in training troops of the tank corps at home, and his promotion up to a point was not rapid, his rank at the opening of the Second World War being still lieutenant-colonel; but by 1942 he

was one of America's 17 lieutenant-generals and thereafter was advanced more rapidly than any other Amer. officer, his outstanding qualities being quickly discovered by Gen. Marshall (q.v.). In Feb. 1942 he became chief of the plans div., War Department, General Staff. In Feb. 1943 he was appointed temporary general. In the following June he was appointed commanding general European Theatre of Operations and from that post proceeded to N. Africa. After the expulsion of the Axis forces from Tunisia and



U.S. Information Service,
American Embassy

DWIGHT D. EISENHOWER

Sicily he was appointed supreme commander of the allied forces and worked on the plans for the launching of the 'Second Front'; the success of the landings and ensuing battle of Normandy owed much to his organising abilities. For more than a quarter of a century E. had been an inspired student of mechanised warfare and in large-scale manoeuvres in America he showed remarkable originality in his direction of this type of combat. In 1922 he was assigned to the Amer. Battle Monuments Commission and went to France to compile a guide-book of the Amer. battlefields there—a useful study in view of his destined appointment in 1944. Later at the Fort Leavenworth Command and General Staff School E. finished first. He was a moving force in the estab. of the Army Industrial College while he worked in Washington on plans for war mobilisation. In 1935 he went to the Philippines as assistant military adviser to the commonwealth under Gen.

MacArthur and for the ensuing 5 years played a major role in devising the defences of the ls. In the *Report by the Supreme Commander to the Combined Chiefs of Staff on the Operations in Europe of the Allied Expeditionary Force 6 June 1944 to 8 May 1945* (H.M.S.O., 1946) is told the story of the planning, courage, work, and final results of the operations in Europe. Through the whole report is to be detected Gen. E.'s impression of complete allied unity, though towards the Brit. Chiefs of Staff in London he often felt impatience, chiefly because they 'regularly queried their commanders in the field concerning tactical plans' (*Crusade in Europe*).

He indicates that 3 episodes were the most decisive in ensuring victory--the battles at the Normandy beaches, the Falaise pocket, and those W. of the Rhine in Feb. and Mar. 1945. 'Victory was won,' he states, 'before the Rhine was crossed.' King George VI conferred on E. the O.M. at Buckingham Palace on 12 June 1945. He retired from the U.S. Army in 1948 after 33 years' service, and in the same year became president of Columbia Univ., New York.

In 1950 he became supreme commander of Allied Powers in Europe, and organised the defence forces in the North Atlantic Treaty Organisation. Nominated by the Republican party in 1952, he was elected U.S. president, and assumed office in Jan. 1953. Major problems of Eisenhower's administration included the Korean War and the question of disarmament and control of nuclear weapons. Proposals made by the president led to the first International Conference on the Peaceful Uses of Atomic Energy, held under the auspices of the U.N.O. at Geneva in 1955. A serious heart attack in Sept. 1955 caused world-wide concern, but he made a good recovery. In June 1956 he underwent an emergency operation for ileitis. Medical opinion being that his health would suffer no permanent impairment, E. accepted the Republican nomination in 1956 and was re-elected in Nov. for a second term as president of the U.S.A. His position in Amer. politics has been classed as unique by many observers: he has become to vast numbers of his countrymen a national symbol, his party allegiance being of little or no significance. This is borne out by the election of Nov. 1956 when, though E. was overwhelmingly re-elected as president, his party failed to gain control of congress. E.'s presidency has been marked by general prosperity at home, and until the eve of his re-election by an apparent easing of tension abroad. His critics both in the U.S.A. and more especially in W. Europe have however suggested from time to time that the president has been too content to be carried along by events, rather than to attempt to shape events by his own positive action, in the Roosevelt tradition. See his *Crusade in Europe*, 1949; and K. S. Davis, *Soldier of Democracy*, 1945; H. C. Butcher, *My Three Years with Eisenhower*, 1946.

Eisenstadt (Hungarian **Kishmárton**), Austrian tn, cap. of the prov. of Burgen-

land, on the Nensiedler-See (q.v.). It is in the centre of vineyards, and has a great castle of the Esterházy (q.v.) family, and a house in which Haydn (q.v.) lived. Pop. 7000.

Eisenstein, Sergei (1898-1948). Russian film director, *b. Riga*. Set the task, after the Russian Revolution, of founding a school of cinema, he rivalled in a short time the Americans, Germans, and Fr. His best work, which made him one of the world's greatest masters and innovators of film technique, was achieved with the silent films: *The Strike*, 1924, *Battleship Potemkin*, 1925, and *October: Ten Days that shook the World*, 1927. Later films were *Alexander Nevsky*, 1938, and *Ivan the Terrible*, 1943.

Eisleben, Ger. tn in the dist. of Halle, at the E. ft of the Lower Harz Mts, 19 m. W. of Halle (q.v.). From the 12th to the 18th cents. it was the cap. of the co. of Mansfeld. In 1780 it went to Saxony, and in 1815 to Prussia. E. was the bp. of Martin Luther (q.v.); the house in which he was *b.* (now a museum) and that in which he *d.* are both in the old part of the tn. There are sev. Gothic churches of note. Copper, silver, and slate are mined in the area, and there are manufs. of textiles and foodstuffs. Pop. 30,000.

Eisner, Kurt (1868-1919). Ger. Journalist and statesman of Jewish descent, *b. Berlin*, his real name being Salomon Kosnowsky. He became associate editor of the Socialist newspaper *Vorwärts*. He organised a bloodless democratic revolution in Bavaria in 1918, becoming Premier and subsequently 1st president of Bavaria, but was murdered by Spartacist soldiers early in 1919.

Eisteddfod, Welsh term used originally for any kind of session, later restricted to a session of the bards (q.v.) held to discuss matters pertaining to their craft and to codify the regulations of their guild. These early *eisteddfodau* were not necessarily competitive, like the modern E., although bardic contests figure as early as the 6th cent. in the story of King Maelgwn Gwynedd. The first competitive E. of which we have trustworthy record is the great festival held by the Lord Rhys at Christmastide, 1176, in his new castle of Cardigan. That festival is not called an E. in the contemporary chronicles but its eisteddfodic features are unmistakable: it was proclaimed a year in advance not only in Wales but also in England, Ireland, and Scotland; there were 2 chief contests; the one was poetic, to test the skill of the bards in the traditional Welsh metres; the other was musical, open to the minstrels and pipers of any nation. The prize in each case was a chair. These prizes were supplemented by bounteous gifts from the Lord Rhys. In 1430 a similar festival, but now under the estab. title E., was held at Carmarthen under the patronage of the Lord Gruffudd ap Nicholas. A notable feature of the Carmarthen E. is that for its sessions Dafydd ab Edmwnd, the most learned bard of N. Wales, codified the rules which the bards of Wales must follow when writing in the traditionally strict

metres of the *Awdl*, or formal alliterative ode. The prin. or Chair Poem at the National E. of Wales to this day must be written to these same metrical rules maintained by an unbroken tradition of over 5 centuries. The rules were revised by the Chief Bard Tudur Aled at an E. held in Caerwys in 1523. A still more important E. was held at Caerwys in 1568 by command of Queen Elizabeth I. Here again there were contests—the best poet receiving a silver chair, the best singer a silver tongue, the best harper a silver harp, and the best crowder a silver *crwth*; but in addition to these contests this 2nd Caerwys E. was held by royal commission for the purpose of examining all claimants to bardic privileges and licensing all genuine poets and musicians, so that henceforth only those who carried the certificates of successful candidates were allowed to travel about the country from mansion to mansion seeking reward for their songs of praise. The National E. of Wales is still held under royal patronage, Queen Elizabeth II being herself a member of the Gorsedd (q.v.) of the Bards of Wales; and the Gorsedd, or Society of Bards, still holds examinations in Welsh poetry and music and presents certificates to successful E. candidates every year. Despite the royal patronage of 1568, during the next 2 centuries the E. deteriorated to nothing more than feeble impromptu contests between a few rural bards met together at a tavern for a carousal, the meeting-place and date being advertised in the popular 'almanacks.'

The modern conception of an E., as a gathering where the public generally are welcome as well as the bards, owes its origin to the famous Corwen E. of 1789. This, like the subsequent series of successful *eisteddfodau* at the close of the 18th cent. and the beginning of the 19th, was held under the patronage of that patriotic society of London Welshmen the 'Gwyneddigion.' The Gwyneddigion *eisteddfodau* reverted to the ant. custom of proclaiming the festival and its subjects a year and a day in advance, thus giving candidates time to prepare worthier odes and essays than could be expected from mere impromptu efforts. This new conception of an E. rapidly spread throughout Wales during the first half of the 19th cent., giving rise to a crop of prov. festivals fostered by prov. or co. societies and patronised by the local gentry and clergy. To these influences must be added the local patriotism of the rapidly growing industrial towns of S. Wales with the fervent hymn-singing congregations of their nonconformist chapels and their valley choirs. These new forces eventually overflowed into the *eisteddfodau* by the inclusion of choral competitions for the first time, in addition to the traditional contests in bardism and minstrelsy. In spite of the now enhanced popularity of the E. as an entertaining competitive folk-festival of the Welsh people, until about 1870 *eisteddfodau* remained sporadic, local, or prov. events. Wales still holds a few prov. and scores of small-

scale local *eisteddfodau*, but the National E. of Wales, held alternately in N. and S. Wales for Aug. Bank Holiday week in every year, is regarded as the supreme festival of the Welsh people. It was estab. in 1880 as a national institution by the joint efforts of the National E. Association and the Gorsedd of Bards. In 1937 both these societies merged to form the present governing body known as *Llys yr Eisteddfod Genedlaethol* (The Court of the National E. of Wales). The holding of the National E. for a full week has now become so colossal an undertaking, with ramifications in literature, music, drama, art, publicity, transport, finance, hospitality, and catering for a daily attendance of about 15,000, that the local organisation now depends very largely on the experience of the Court both for guidance and for substantial financial backing to supplement individual subscriptions received annually from all parts of Wales.

The festival is held entirely in the Welsh language and is regarded as the Mecca of Welsh culture, to which Welshmen love to flock from all parts of the globe. It is maintained as a purely voluntary effort and receives no gov. grant towards its concerts, plays, art exhibitions, or pubs. Other Celtic competitive festivals estab. on the E. model are the Oireachtas of the Rep. of Ireland and the Mod (q.v.) of Scotland.

In recent years the word *eisteddfod* has been misapplied to designate a colourful and competitive international festival of folk-dancing and music held at Llangollen, but it will be seen from the list, of the term that a festival devoid of bardic and literary content and conducted in Eng. cannot be an E.

Eistat, see EICHSTÄTT.

Ejectments, see RECOVERY OF LAND.

Ejectors, see PUMP.

Ekaterinburg, see SYVERDLOVSK.

Ekaterinodar, see KRASNODAR.

Ekaterinoslav, see DNEPROPETROVSK.

Ekhmin, or **Ikhhmin**, see AKHHMIM.

Eklogite, see ECLOGITE.

Ekron, city of the Philistines on the borders of Judah and Dan, where Beelzebub was worshipped. It was the place from which the Ark of the Covenant, which had been captured by the Ascalonites, was returned to Israel. At a later period it became part of the ter. ruled by the Maccabees. E. was one of the 5 allied cities or Pentapolis (the others being Gaza, Ascalon, Ashdod, and Gath) of the 'Philistines' or Philistines (1 Sam. v. vii, xvii; 2 Kings i and Zeph. ii, and Zech. xvi). Its present inhab. number about 475 and in its neighbourhood is a Jewish agric. settlement founded by Baron Rothschild in 1884.

Elaeagnus, family Elaeagnaceae, genus of shrubs and trees, of which *E. angustifolia*, the Oleaster of S. Europe and W. Asia, *E. argentea*, S. U.S.A., are deciduous while *E. pungens* of Japan is evergreen. All are cultivated in gardens in Britain.

Elaeocarpus, genus of Elaeocarpaceae. *E. serratus* bears an olive-like fruit used

by the natives of India as an ingredient of their curries; *E. peticulatus* has white flowers and is one of the most ornamental of Australian plants.

Elaeococca, genus of Euphorbiaceae. The seeds yield valuable oil. *E. verrucosa* of Japan produces seeds supplying oil for burning, and *E. vernicia* of China furnishes oil used for painting.

Elaeodendron, family Celastraceae, genus of 40 species of tropical shrubs and trees. *E. capense*, the Cape Phillyrea of South Africa, *E. glaucum* of India, *E. orientale* of Madagascar, and *E. sphaerophyllum* of South Africa may be grown in heated greenhouses in Britain for their ornamental, laurel-like foliage.

Elaeolite, crystalline plutonic rock of the syenite family composed largely of nepheline and alkali feldspar. It does not contain quartz, but is rich in many other minerals which contain alkalis.

Elaelabalus, or **Heliogabalus** (c. AD 203-222), Rom. emperor, b. at Emesa. His original name was Varius Avitus Basianus, but he received the name E. or H. from the Syro-Phoenician sun-god whose priest he became while still a child. Thanks to the intrigues of his grandmother, Julia Maesa, he was proclaimed emperor in 218 and estab. in that position by the assassination of Macrinus. E. appears to have been well-nigh raving mad; his brief reign was marked by the most abominable excesses, and he was eventually murdered by the praetorian guards.

El Alamein, see AFRICA, NORTH, SECOND WORLD WAR, CAMPAIGNS IX.

Elam, auct name for prov. of Persia situated along the lower course of the R. Tigris. Susiana (from the name of Susa, its prin. city) was the name given in classical hist. to the S. portion of this area, which now falls mainly in the Persian prov. of Khuzistan. This portion was called by the Greeks Elymais (q.v.).

Elan, riv. of Wales, flowing through Cardiganshire and Radnorshire to join the Wye S. of Rhayader. Dams have been erected on this riv. to form reservoirs for the city of Birmingham; on the R. (Iwerwen, a trib. of the E.), the highest gravity dam in Great Britain (184 ft high, 1166 ft long) has been constructed to create another reservoir.

Eland, popular name of a genus of large and almost exclusively African antelopes, characterised by the general absence of horns in the females and by those of the male being devoid of rings, angulated in front, and usually spirally twisted. Both sexes have a large dewlap, and the crowns of the upper molar teeth are low and broad. The common E. (*Taurotragus oryx*) formerly ranged over the greater part of S., E., and Central Africa, but is now extinct in the S. of the continent. Its complete extirpation is probably only a matter of time, the animal being frequently slaughtered for its hide. The magnificent species known as Lord Derby's Eland (*T. derbianus*) inhabits more wooded country, occurring from Senegambia to the Sudan and Portuguese Guinea.

Elanet, or **Elanus**, genus of Falconidae closely allied to the kites, found in all the continents. *E. caerulus*, the black-winged kite, is common to Africa and Asia, and is occasionally seen in Europe. *E. scriptus* belongs to Australia; *E. dispar*, the black-shouldered hawk, occurs in America. All are birds of prey and some will eat even insects.

Elaps, see CORAL SNAKES.

El Arish is a small tn on a slight eminence about half a m. from the Mediterranean shore, in the Sinai Peninsula, Egypt. It contains Rom. remains including sev. marble columns, and is the site of the anct Rhinocolura. It was taken by the Fr., 1779, in whose possession it remained for some time. At A. Sir Sidney Smith concluded a convention with the Fr. Army, which was afterwards disavowed by the Brit. Gov. Pop. 10,000.

E.L.A.S. (Gk *Ellinikos Laikos Apelevtherotikos Stratos*), a Gk liberation army of the left in the Second World War, originally a section of E.A.M. (q.v.).

Elasmobranchii, or **Selachii**, a class of fishes with an inner cartilaginous skeleton and with the skin generally bearing placoid scales which have a tooth-like structure. The fin-rays (ceratotrichia) are horny. In all living E. the males have paired intromittent organs which are modifications of the pelvic fins. The class consists of the Euselachii and the Holocephali (chimaeras) which are the survivors of a long fossil hist.

The Euselachii are subdivided into the Pleurotremata, the sharks, and the Hypotremata, the rays, and these are again divided into families. The gill clefts of sharks are lateral; the anterior margins of the pectoral fins are free, and the eyes have free margins. The gill clefts of rays are ventral; the anterior margins of the pectoral fins are fused to the head or body, and the upper margins of the eyes are not free. Five pairs of open gill slits are usually present, but some sharks have 6 or 7 pairs. The shape of the body varies considerably. Some forms, like the blue shark, are adapted for cruising in the open sea. Others, like the carpet shark, are adapted for life on or near the ocean bed, and rely on protective coloration and strategy to secure their prey. Others, like some rays, live on the floor of the sea, but are able to move rapidly by undulations of their pectoral fins. These fish dart on their prey, cover it with their bodies, and devour it at leisure. Most of the larger sharks and all rays, except the skate family Rajidae, are viviparous. But the largest shark, the whale-shark, and the dogfishes lay large eggs encased in a horny capsule.

Elasticity is the property of a substance which enables it to tend to recover its initial form and size after it has suffered a deformation and the deforming forces have been removed. Matter is conveniently divided into 3 states, solid, liquid, and gas, although the distinction cannot always be clearly made. A solid has a definite shape and resists any tendency to change its shape, i.e. solids possess rigidity. Liquids and gases take up the

shape of their container, but whereas gases always fill the container, liquids have a definite volume and in consequence can possess a free surface. Liquids and gases do not in general resist an attempt to change their shape but, together with solids, resist any tendency to a change of size.

Bodies with similar properties in all directions are said to be *isotropic*. The properties of *anisotropic* bodies are different in certain directions and present somewhat complicated problems which will not be considered here.

The best known example of E. is the ability of rubber to recover from stretching, bending, twisting, shearing, and compression, properties which are possessed to a certain extent by all solids. Consider first a wire hanging vertically from a rigid support, and arrange a device to observe the variation of its length with the weight attached to its free end. It is found that for small weights the extension is proportional to the weight applied, provided the observations are not extended over a very long period of time. The relation was first recognised by Robert Hooke in 1678 and stated in the form *ut tensio sic vis*, i.e. for such an extension such a force. In more precise terms, *stress* is proportional to *strain*, where strain is defined as the extension per unit length of the wire and stress is the force applied per unit area of cross-section. The ratio of stress to strain is thus a constant for a given material and is known as the modulus (q.v.) of E. For the case of a 'wire' suffering a uniaxial strain, the constant is termed *Young's Modulus* (E), and therefore $mg/A = Y(\delta l/l)$ where mg is the force due to gravity acting on the applied mass m , A is the area of cross-section, and δl is the extension of a length l . When the wire is extended it also exhibits a decrease (δr) in its radius (r), and the ratio of the fractional transverse contraction to the fractional longitudinal extension is a constant for a given material and is called Poisson's ratio, σ . Thus $\sigma = (\delta r/r)/(\delta l/l)$ and has a value between 0.25 and 0.40 for most metals.

For larger extensions than those so far considered, Hooke's Law ceases to apply and when the load is removed the wire fails to return to its original size. It is then said to have been taken beyond its *elastic limit*, and to have acquired a permanent set, i.e. it has suffered a plastic, as distinct from an elastic, deformation. For yet larger extensions the relation between stress and strain becomes more complicated for some metals, owing to a process known as 'hardening,' but eventually all solids reach a breaking stress usually consequent upon a localised constriction or 'necking.' Young's modulus, Poisson's ratio, the elastic limit, and the breaking stress are of importance in engineering (see STRENGTH OF MATERIALS). The bending of a beam, e.g., can be estimated in terms of Young's modulus, the dimensions of the beam, and the load applied to it.

When the stress is applied uniformly in all directions to a body, as e.g. when it is

submerged in a fluid contained in a rigid vessel and pressure is applied to the surface of the liquid, the body suffers a change in volume which is proportional to the applied stress. The strain is now defined as the change in volume per unit volume ($\delta v/v$) and the constant of proportionality is the *Bulk Modulus*, K . It can be shown that there is a relation between the elastic constants E , K , and σ , namely $E = 3K(1 - 2\sigma)$.

When a shearing stress is applied to a body, layers of material move relative to each other, as may be seen, e.g., when a pack of cards is placed flat on a table and its shape distorted (but its volume unchanged) by pressing forwards and slightly downwards on the top card. An elastic body, of course, would return to its original shape after such a shearing deformation, but the pack of cards remains in its distorted shape. The angle of shear, θ , is the angular displacement of a plane initially perpendicular to the direction of the shearing stress, and the ratio of this stress (F/A) to θ is known as the modulus of rigidity (n). It can be shown that $E = 2n(1 + \sigma)$. The values of E and n are relatively easy to obtain from experiments, the former by stretching and the latter from twisting (see below), but K and σ are more difficult to measure directly. It is often easier to calculate K and σ from values of E and n , using the equations quoted. The modulus of rigidity, n , can be found as follows. In order that one end of a wire may be twisted through an angle ϕ with respect to its other end, it is necessary to apply a couple or torque given by $\pi nr^4\phi/2l$ where r is the radius of the wire and l its length. The variation of ϕ with the couple is observed. The value of n may also be found by a torsional oscillation experiment. If a wire is firmly clamped at its upper end and a body of moment of inertia I is fixed to its lower end, the period of torsional oscillations is given by $T = 8\pi I/nr^4$, and provided the elastic limit is not exceeded the value of T is independent of the amplitude of the oscillation.

The E. of gases is of particular interest because the values obtained for the bulk modulus depend on the rate of change of the vol. When the vol. of a gas is changed there is an evolution or absorption of heat. If the change takes place slowly, heat can be exchanged with the container and its surroundings. But for rapid alternating changes of vol. no heat will be exchanged. The classic example of the latter situation occurs in the transmission of sound (q.v.) in a gas. The bulk modulus can be shown to be numerically equal to the pressure, P , of the gas for slow variations of vol., and for rapid variations it equals γP , where γ is the ratio of the specific heats of the gas at constant pressure and at constant vol. The velocity of sound in a gas is then given by $\sqrt{\gamma P/\rho}$ where ρ is the density of the gas.

The E. of materials arises from the forces acting between molecules or atoms. The bulk modulus measures the force

required to make the average distance between the atoms greater or less, and shows that the force between atoms is repulsive for very small separations but for larger distances becomes attractive. The other moduli for solids are a measure of the force required to distort the arrangement of the atoms in the solid.

When rubber and certain synthetic materials are subjected to stresses their behaviour differs from that of most other substances in that, even after considerable deformations have been produced, rubber and rubber-like materials revert to nearly their initial form when the stress is removed. The common feature of all such elastomers is that they are built up of molecules each of which has a long chain of atoms. These molecular chains have relatively few or weak links with neighbouring chains, and in the unstretched material most of the chains are coiled back irregularly upon themselves like the strands of a tangled skein of wool. When a stress is applied the chains are straightened out, and arrange themselves more nearly parallel to one another. Atoms are continuously in vibration, however, and the result of this is that, when the stretching force is removed, the chains tend to revert to their coiled up configuration, and the material spontaneously retracts to its original length. Many naturally occurring fibrous materials such as silk, collagen, and wool also have long chain molecules. They do not, under normal circumstances, exhibit long range E. of the same order as rubber because the links joining neighbouring chains are more numerous and prevent the chains becoming randomly bent, but the stretchiness of wool is probably due to a straightening out of the long chain molecules. See MATERIALS, STRENGTH OF; MODULUS; PHYSICAL CONSTANTS. See A. E. H. Love, *A Treatise on the Mathematical Theory of Elasticity*, 1927; R. Houwink, *Elasticity, Plasticity, and Structure of Matter*, 1937; R. V. Southwell, *An Introduction to the Theory of Elasticity for Engineers and Physicists*, 1942.

Elastin and Elastic Fibre, see TISSUE.

Elatea (modern *Drachmani*), largest tn of Phocis in anc. Greece: situated near the Cephissus and not far from one of the chief passes leading from Thessaly to Boeotia. There was a temple of Aesculapius, and another dedicated to Athena Cranaea which was excavated in 1883. E. was captured by Philip of Macedon in 338 B.C., an event to which Demosthenes refers in a celebrated passage of the *De Corona*.

Elater Beetle, see CLICK BEETLES.

Elaterin, active principle of elaterium. It is a chemical substance, its formula being $C_{12}H_{14}O_8$. It is extracted, by means of boiling alcohol, from the juice of *Ecballium agreste* in the form of colourless hexagonal crystals which are insoluble in water. Elaterium is a vegetable extract obtained from *Ecballium elaterium*, a perennial tropical plant. It is very bitter, and a powerful purgative.

Elaterite, an elastic bitumen. It is blackish-brown in colour, translucent, and

is found in soft, sticky masses in Derbyshire, near Edinburgh, and in Fifeshire. It is sometimes called mineral caoutchouc, and is very much like India-rubber.

Elatia, see CITHAERON.

Elatinaceae, dicotyledonous family of small herbs of wet places, 2 genera, cosmopolitan. *Elatine hexandra*, and *E. hydropiper*, the water-pepper, are small, submerged annuals found in ponds, etc., in Britain.

Elba (Gk *Aithalia*, Rom. *Ilva*), It. is. in the Tyrrhenian Sea, administratively part of the prov. of Leghorn (q.v.). The nearest point on the mainland is Piombino (q.v.), from which it is separated by a channel 6 m. wide (the Strait of Piombino). The is. is mountainous (Mt. Capanne, 3340 ft.), and the coastline is very irregular. Iron-ore has been mined since early times, and marble, lead, sulphur, and alabaster are also exported. Vines, olives, mulberries, and cereals are grown, and there are sardine and tunny fisheries. The is. is famous as the realm which the fallen Napoleon I (q.v.) ruled from 3 May 1814 until 26 Feb. 1815. In the Second World War the is. was taken by Fr. forces on 19 June 1944. The cap. is Portoferraio (q.v.). Area 85 sq. m.; pop. 30,000.

Elbasan, tn of Albania, in the prefecture of the same name, on the r. b. of the R. Shkumbi, with numerous mosques, in a fertile plain. Olives and maize are cultivated. Pop. about 15,000, of whom 85 per cent are Muslims. E. was captured by the Serbs during the Balkan wars but was returned to Albania. In the Second World War in the fighting against the Italians (who had seized Albania before the war) the Greeks advanced on E. in Dec. 1940. The tn was bombed by the R.A.F. in Jan. 1941, but the Ger. advance from the N. in Greece prevented further operations against E.

Elbe (Czech *Labe*; anc. *Albis*), riv. of Czechoslovakia and Germany. In Germany it is next in importance to the Rhine (q.v.); it provides passage for ocean vessels as far as Hamburg (64 m. from the mouth), and it is navigable for smaller boats as far as its junction with the Vltava (525 m.). The E. rises at an altitude of 1600 ft. on the S. slopes of the Riesengebirge (q.v.), and flows at first S. and then N. and NW. At Mělník its vol. is more than doubled by the confluence of the Vltava (q.v.), while at Litoměřice its waters are reddened by the Ohře (q.v.). Soon, after piercing the basaltic Mittelsgebirge, it crosses the Bohemian frontier into Germany near Děčín (q.v.), flows past Dresden and Meissen, and begins, in a NW. direction, its long course over the N. Ger. plain. Passing the tns of Torgau, Wittenburg, Magdeburg, Hamburg, and Altona, and swollen with the waters of the Mulde and Saale (q.v.) from the left, and the Havel (q.v.) and Elde from the right, it finally reaches the North Sea at Cuxhaven (q.v.). Above Hamburg the riv. separates into 2 streams, which unite again shortly. At Kolln the width is 100 ft. at Dresden 960 ft. whilst near the estuary it varies from 4 m. to 9 m. Since 1871 great improvements, including har-

bours, docks, and canals, have been made in E. navigation, although the riv. is still subject to inundations. Sev. canals have effectively joined up the E. and Oder (q.v.) systems, while the E.-Trave canal (42 m.) of 1900 allows direct communication between Lübeck and the E. The very heavy vol. of goods traffic is carried by steamers and barges.

International changes resulting from the First World War, and especially the recognition of Czechoslovakia as a separate nation, gave a new political importance to the E., which was declared by the treaty of Versailles (q.v.) to be an international riv. below the confluence of the Vltava, under a committee on which Germany, Czechoslovakia, Britain, France, Italy, and Belgium were represented. The drainage area of the E. basin is estimated at 56,000 sq. m. Length 725 m.

In the operations on the W. Front in 1945 Gen. Bradley, Amer. gen. commanding the Central Group of Armies, was directed by Gen. Eisenhower (q.v.) in April to seize any opportunity of capturing a bridgehead over the E. and to be prepared for operations farther E.; but it was anticipated that these would be unnecessary, as the speed of the Russian advance from the E. would probably lead to a junction with them over the riv., if not W. of it. The Amer. Ninth Army reached the E. S. of Magdeburg, on 11 April and crossed the riv. the next day. A second bridgehead S. of Wittenberg was achieved by the 5th Armoured Div. of 13th Corps on 13 April. On 14 April the 3rd Armoured Div. of 7th Corps reached Dessau, immediately S. of the confluence of the Mulde and E. rivs. On 21 April Brit. troops, who had won a bridgehead a few days previously, expanded their hold and crossed the riv. near Lauenburg, S.E. of Hamburg, on 29 April. On the 25th Amer. patrols of the 69th Div., which had probed eastward from the Mulde, met elements of the Russian 58th Guards Div. in the Torgau area on the riv. The junction of the E. and W. fronts had been effected on the riv. and Germany was cut in two. Thus the object of the central thrust under Gen. Bradley had been achieved. While the Amer. forces in the centre were halted on the E. and Mukle other forces turned to the completion of the operations in the N. and, accordingly. In the N. sector 21st Army Group was directed to seize other crossings over the E. in the Brit. Second Army zone, secure Hamburg and advance at speed on the general area of Kiel-Lübeck. On 2 May Brit. forces crossed the E. again and turned down its r. b. toward Hamburg which surrendered to the 7th Armoured Div. on 3 May. See further under EASTERN FRONT or RUSSO-GERMAN CAMPAIGN IN THE SECOND WORLD WAR, and WESTERN FRONT IN THE SECOND WORLD WAR.

Elberfeld, see WUPPERTAL.

Elbeuf, or **Elboeuf**, Fr. tn in the dept of Seine-Inférieure, on the Seine, 14 m. S. by W. of Rouen by rail. It has been one of the chief centres of the woollen industry in France since the 13th cent. The tn

was badly damaged in the Second World War. In Aug. 1944 the Germans made a desperate stand at E. to guard the ferries as the Ger. Army withdrew across the Seine. Pop. 16,000.

Elbing, see EBLAG.

Elblag (Ger. **Elbing**), tn of Poland, in Gdansk prov., on the navigable E. R., at the SW. end of the Frisches Haff (q.v.). Until 1945 it was in E. Prussia. The tn was founded in the 13th cent. by settlers from Bremen and Lübeck, and it became a member of the Hanseatic League (q.v.) and an important port for trade with England. From 1466 until 1772 it belonged to Poland. During the Thirty Years War it was in Swedish hands (1626-36). In 1772 it passed to Prussia. The greater part of the tn was destroyed in the Second World War during the Russian advance into Germany. Since the end of the war there has been much reconstruction. There are engineering and electrical industries. The shipyards of E. have been famous since the middle of the 19th cent. Pop. 40,000 (1940, 86,000).

Elbogen, see LOKET.

Elbow, see ARM.

El'brus, highest mt in the Caucasus, in the main range, its W. peak attaining a height of 18,170 ft. The other summit, which was reached for the first time in 1868 by Freshfield, is 18,347 ft above sea-level. It is an extinct volcano, whose glaciers cover 16 sq. m. The Daksan glacier extends down to a distance of 7350 ft above the sea. See R. L. G. Irving, *Ten Great Mountains*, 1940.

Elburz Mountains, lofty range in the N. of Persia, along the S. border of the Caspian Sea. The E. consist of a series of narrow, extremely steep folds, with a number of peaks reaching over 10,000 ft. within a distance of 30 m. from the Caspian shore, which is 88 ft below sea-level. The highest peak of the E. M. is Mt Damavand, a volcanic cone, N. of Tehran, rising to over 18,000 ft. At the broadest point the E. M. are 60 m. wide. On the N. slopes ann. rainfall exceeds 100 in. and forests grow up to a height of 7000 to 8000 ft. The Talish Hills in the W. link the E. to the massifs of the Caucasus and NW. Zagros. To the east long. 56° the E. M. are succeeded by a plateau dividing them from the Kopet Dagh and Ala Dagh. The Sefid Rud, rising near Sanandaj in Kurdistan, breaks through the E. M. and enters the Caspian east of Rasht, and the Harhaz, rising some 25 m. N. of Tehran, flows through the Lar plateau, where it is known as the Lar R., turns NE. and enters the Caspian near Amol.

El Capitan, granite peak, 7564 ft high, in the Yosemite valley, on the W. slope of the Sierra Nevada, in California, U.S.A.

Elche (ancet Ilici), Sp. tn in the prov. of Alicante, famous for its immense forest of palm trees, irrigated by canals, which provides all Spain with leaves for Palm Sunday. E. has also the only mystery play in Spain, performed on 14 and 15 Aug. each year. Leather goods are manufactured. Pop. 53,850.

Elchingen, Ger. vil. in the *Land of Baden-Württemberg* (q.v.), 8 m. S.E. of Aalen (q.v.). Marshal Ney (q.v.) was created duke of E. after his defeat of the Austrians here in 1805.

Eloho Challenge Shield, *see under* BISLEY.

Elder, Presbyterian (church official). The session of a Presbyterian church is composed of E.s, preaching and ruling. The preaching E. is the minister, who is ordained and inducted by the Presbytery and is the moderator of the congregational session. The ruling E.s are elected for life by the congregation, and are ordained and inducted by the moderator of the session. In some Amer. branches of the Presbyterian Church the E.s are only elected for a certain number of years. The session has the spiritual gov. of the congregation in its hands, and only through it can members of the congregation appeal to a higher court of the Church. When John Knox set up the Presbyterian gov. in Scotland he meant the ruling E.s to be salaried office-bearers and thought that they should be elected annually. However, the alienation of the Church funds from eccles. to secular holders prevented his idea from being carried into effect. An E. should, in the words of Paul (1 Tim. iii. 2), 'be blameless, the husband of one wife, vigilant, sober, of good behaviour, given to hospitality, apt to teach.' The courts of the Presbyterian Church are entirely made up of E.s, preaching and ruling, e.g. the congregational session, 1 preaching E. and 1 ruling E. for about every 20 members. The Presbytery and Synod generally are 1 preaching and 1 ruling E. from each congregation; the General Assembly, a certain number of each from each Presbytery within its gov. Thus the Presbyterian Church claims apostolic authority for its Church gov.

Elder, *Sambucus*, family (Caprifoliaceae); a genus of deciduous shrubs or small trees, rarely herbs. *S. nigra*, the common E. or Scotch bourtree, is native to Britain and Europe, with flowers and berries used in wine-making, and stem-wood used for fishing rods, toys, etc. It has sev. varieties of ornamental horticultural interest. *S. racemosa*, a small shrub of 8 to 10 ft. is ornamental in foliage. *S. canadensis*, Danewort, is a native herbaceous perennial, with pink-tipped flowers in summer.

Elderberry Wine, prime favourite with country people, resembling Burgundy or port when properly made, requires 4 lb. ripe, dry berries (no twigs) to each gallon of water. (*See* WINES, HOME-MADE for general directions and precautions.) Bruise berries, pour on the boiling water, cool to 98° F., stir in 1 oz. crumbled yeast, and leave 3 days, stirring daily. Strain, stir 3½ lb. sugar into the juice, leave 4-6 weeks to ferment, bottle, and store in a cold dry place for a year. Try at 6 months.

Elderflower Wine, *see* WINES, HOME-MADE.

Eldon, John Scott, 1st Earl of [(1751-1838), lawyer and statesman, b. Newcastle, almost blighted his prospects by

making a runaway marriage as soon as he had won his fellowship at Univ. College, Oxford. He was called to the Bar in 1776, and from that time success smiled on him. He entered parliament, became solicitor-general in 1788, attorney-general in 1793, chief justice of the court of common pleas (1799), and was lord chancellor for many years. His only politics were a lively hatred of the Rom. Catholics, and he was a poor speaker, a tedious but sound judge, and a victim to parsimony. But he had a large share in establishing modern equity as a coherent body of principles no longer measurable by 'the length of the Chancellor's foot.' *See* W. E. Sutcliffe, *Sketch of the Lives of Lords Stowell and Eldon*, 1846; W. S. Holdsworth, *Some Makers of English Law*, 1938.

El Dorado: 1. Means in Spanish 'The Golden,' and was the name given to a fabulous city long believed to exist somewhere in the interior of S. America. The belief in the existence of the mythical city of gold was based on the tales of a Sp. soldier, Martinez, set adrift by his companions when exploring the Orinoco. Finding his way back some months later, he narrated how he had been taken by the Indians to a great inland lake with golden sands, on which was a vast city roofed with gold. Certainly as early as 1500 confused accounts were given to Sp. sailors about a rich city abounding in gold and precious stones, situated on the borders of Lake Parima somewhere within Guiana or Guyana. Numerous Sp. expeditions set out to find it and most of them came to grief on the Amazon. One of the seekers was Don Diego de Ordaz, governor of Quito, who was the first man to build a tn (St Thomas of Guiana at the confluence of the Caronius Orinoco in ter. now belonging to Venezuela). Among other futile expeditions, of which E. D. was the imaginary goal, were those of Orellana (1540), Philip von Hutton (1541-3), who told how once he had caught a glimpse of the gleaming city, and Jiménez de Quesada (1569). Also in quest of E. D. was Sir Walter Raleigh, who set out in 1595, having sold his wife's and his own property in order to raise £10,500 for the expedition. In this ill-fated expedition he lost his son, his health, and his fortune. Undeterred by his chief's failure, Capt. Keymis, at Raleigh's expense, undertook a 2nd voyage and purported to identify E. D. with some spot on Lake Parima. The purely legendary Manoa, with roofs and walls of precious stones, to which Martinez said he had been taken, long occupied a conspicuous place on the map, till Humboldt proved it to be a fiction. But though E. D. was swept from the atlas, it has secured a high niche in literature as the goal of happiness after which humanity never wearies of striving. *See* D. G. Brinton, *The Myths of the New World*, 1896.

2. City of S. Arkansas, U.S.A., co. seat of Union co., chief tn in the pioneer oilfield of the state. It is a trade centre for a lumber and farm area. Pop. 23,076.

Elea, see **ELIS**.

Eleanor of Aquitaine (Guienne) (c. 1122–1204), queen of France and afterwards of England, daughter of William X, duke of Aquitaine. She married Louis VII of France in 1137. The marriage was annulled in 1152. The same year she married Henry of Anjou who became Henry II of England, 1154. E. was implicated in her son's (by Henry) rebellion, 1173, and was imprisoned until 1185. She acted as regent during her son Richard I's absences. E. had great territorial wealth of her own; Aquitaine was her marriage dowry and its acquisition considerably increased Henry II's prestige and power. She is traditionally represented as extremely hot-tempered and was clearly a born intriguer.

Eleanor of Castile (d. 1290), queen of Edward I of England and half-sister of Alfonso X of Castile, surnamed the Wise, accompanied her husband to the Crusade in 1270, and is traditionally said to have saved his life by sucking the poison from a wound inflicted by a poisoned arrow; she was buried at Westminster. The route of her funeral procession was commemorated by a series of crosses erected by her husband at each halt.

Eleanor of Guienne, see **ELEANOR OF AQUITAINE**.

Eleanor of Provence (c. 1221–91), queen of Henry III of England, daughter of Raymond Berenger IV, count of Provence. She married Henry in 1236, and much of Henry's favouring of foreigners was said to be due to her influence. She took the veil in 1276 and d. at Amesbury, Wilts.

Eleatic School, The, school of Gk philosophy which fl. from 570–450 BC, so called because its leaders were natives of the Gk colony, Elea, in S. Italy. Parmenides may not have been its founder, but he at least, with Zeno, became identified to a peculiar and especial degree with its salient principles. After the death of its great exponents, the E.s gave themselves over to futile verbal debates, whilst their serious contributions to mental science formed the basis of Plato's metaphysics. Parmenides and his adherents dilated on the unity of being and all phenomena, and on the paradoxical conception that 'the All is One,' and argued that this truth is hidden from the masses because their senses mislead and confuse them. Thought alone can attain to this conception by soaring high above the domain of the false and sensuous seemings. Other members of this school were Xenophanes and Melissus (qq.v.). See J. Burnet, *Early Greek Philosophy*, 4th ed. 1948; J. E. Raven, *Pythagoreans and Eleatics*, 1948.

Elecampane, or *Inula helenium*, a composite plant with aromatic and bitter leaves and root. Formerly much used as an antiseptic aromatic herb, the root being candied and used for chest troubles. An ingredient of absinthe.

Election (in theology), see **PREDESTINATION**.

Election, Equitable Doctrine of, in law, the choice which a beneficiary must make between 2 alternative rights or benefits

conferred by the same will, deed, or other instrument. This necessity would arise if A, by his will, gave property of his own, x, to B and purported to bequeath to C property, y, which B owned or was entitled to claim. B must elect either to (i) take 'under the will' by taking x so that C receives y, or (ii) take 'against the will,' in which case he may retain y but must compensate C out of x. See E. H. T. Snell, *Principles of Equity* (24th ed.), 1954.

Elections, in Great Britain. **PARLIAMENTARY**.—The election writ.—Polling districts.

The authorisation for the issue of writs for a general election is the royal proclamation announcing the dissolution of



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parliament and the date of the summoning of a new parliament. Writs are issued by the Clerk of the Crown as soon as possible after the pub. of that proclamation. When the House of Commons is in session, the writ for a by-election arising from the death of a member, or the vacating of his seat by elevation or succession to the peerage, or from some other legal cause, is made out by the Clerk of the Crown for constituencies in Great Britain or the Governor of Northern Ireland for constituencies there, on the authority of the Speaker's warrant which is issued on the order of the House of Commons on a motion by the chief whip of the party to which the member belonged. This motion takes precedence over all other business of the House. If the House is in recess the Speaker may issue his warrant on 2 members certifying to him that the seat is vacant, but cannot do so where the vacancy arises from the lunacy of the sitting member, or where he has accepted the Chiltern Hundreds.

Writs are sent to the returning officers of the constituencies (in co. constituencies the sheriffs, in hors. the mayor or chairman of the local council). The method of distribution is normally by post, the writs being transmitted as registered letters to local postmasters, who remit them to the

returning officers, although there is power to determine by order in council which method shall be used. Neglect or delay in delivery of a writ is a misdemeanour. Pub. of the notice of election, stating the time and place at which nominations may be delivered, and the date of the poll in the event of a contest, must be made not later than 4 p.m. on the 2nd day after that on which the writ is received. A general election usually takes place within 21 days of the dissolution. The Representation of the People Act, 1918, provides that the interval between the proclamation and the meeting of the new parliament shall be not less than 20 clear days.

Returning officers attend at the place specified in the notice for the receipt of nominations, which may be delivered between 10 a.m. and 3 p.m. (on Saturdays between 10 a.m. and noon) on any day after the pub. of the notice of election, and not later than the 8th day after the proclamation. For by-elections the hrs for receiving nominations are the same, but the last day is fixed by the returning officer, not earlier than the 4th day after pub. of the notice, and not later than the 9th day after the writ is received, for a co. constituency. In a bor. constituency the days are the 3rd and 7th respectively. Each candidate must be nominated on a separate nomination paper, signed by a proposer and seconder, and bearing the names of 8 other persons assenting to the nomination. No persons can subscribe more than 1 nomination paper at the same election.

Nomination papers must be made available by the returning officers to any registered elector requiring them. The paper has to contain the full name, address, and description of the candidate, but reference to his political activities is prohibited, and there need not be any reference to his rank, profession, or calling except where this might be necessary to identify him. Any person nominated as a candidate must signify in writing his willingness to stand; that written consent must be deposited with the returning officer at the same time as the nomination papers, and it must also contain a declaration that the candidate is aware of the contents of the House of Commons Disqualification Act, 1957, and that to the best of his knowledge and belief he is not disqualified from membership of the House of Commons.

A candidate must also deposit £150, either in legal tender or by banker's draft. This will be forfeited if the number of votes cast for him or her does not exceed one-eighth of the total, otherwise it will be returned as soon as possible after the declaration of the poll. Withdrawals of nominations must be made in writing, during the period permitted for deposit, and delivered to the returning officer. Objections may be made up to 1 hr after the time fixed for the close of nominations, but if after that time the number of candidates nominated does not exceed the vacancies they will be declared elected. The returning officer will then publish a statement showing the names,

addresses, and descriptions of those nominated, together with the names of those subscribing to their nominations, and similar particulars about those who had been nominated and the reasons why they might no longer be so.

Expenditure by a candidate or by his agent at a general or by-election is limited to £450 plus 2d. for each elector in a co. constituency or 1d. in a bor. Within 14 days of the declaration of poll all bills for the campaign must be in the hands of each agent; they must be settled within the next 14 days, and a complete statement must be sent to the returning officer within 35 days of the election being held. These returns are subject to public scrutiny for 2 years, after which they may be returned to the candidate or his agent or destroyed. Eventually statistics showing how much a candidate spent in the election, and how much he or she was entitled to spend, are pub. by order of the Home Secretary and the secretary of state for Scotland. Failure to send in a return and declaration of expenses within the prescribed period is an illegal practice which may preclude a successful candidate from sitting and voting in the House of Commons, on the liability of forfeiting £100 for each day he does, until the return is made.

Polling dists. are fixed by local authorities, who also designate the polling stations. Polling in a general election takes place between 7 a.m. and 9 p.m. on the 9th day after the last day for the delivery of nomination papers. For a by-election the hrs are the same, but the polling day is fixed by the returning officer between the 7th and 9th day after the last day for receipt of nominations. In computing any period of time, Sundays, Christmas Day, Good Friday, bank holidays, days of public thanksgiving or public mourning are disregarded.

The poll.—All polls are held on one day. Poll cards, bearing the name of the constituency, the elector's name and qualifying address, his or her number on the register, the date and time of the poll, and the location of the polling station, are sent to each elector by the returning officer. The recording of votes takes place in a booth screened from observation. Voting is effected by making a cross on the ballot papers opposite a chosen name. The secret ballot was introduced in 1872 when election by nomination was abolished. At a parl. election a person is not entitled to vote in more than 1 constituency, or more than once in the same constituency. Ballot papers contain only the names and descriptions of the candidates as shown in the official notice of nominations, and are marked with an official mark, either embossed or perforated, which is kept secret and not used for an election in the same constituency for at least 7 years. The use of motor cars for conveying electors to the polls was regularised under the Representation of the People Act, 1948. The number of cars employed must not exceed 1 for every 1500 electors in a co. constituency and 1 for every 2000

in a box. All cars for this purpose must be registered with the returning officer, who issues a certificate authorising their use.

Presiding officers for the polling stations and a suitable staff of clerks for duty are selected by the returning officers, whose expenses are met by the Treasury. The presiding officer will be responsible for supervising the conduct of the poll at his station. The only persons permitted to enter the station other than voters are the candidates and their election agents, polling agents appointed to attend the station, clerks appointed to attend, police constables on duty, and companions of blind persons. At the close of the poll the presiding officer must seal the ballot boxes and deliver them, together with the various election documents, to the returning officer, who opens them and arranges for the count.

No persons other than the returning officer, the candidates, their wives or husbands, their election agents, and the counting clerks can attend the count except by permission of the returning officer. All those assisting at polling stations, or attending or assisting at the count, have to make a solemn declaration not to divulge unlawfully any information about the voting. The penalty for so doing is a term of imprisonment of up to 6 months. Any election official guilty of tampering with nomination or ballot papers is guilty of a misdemeanour and liable to imprisonment for up to 2 years; any other person who does so is liable to a term of up to 6 months. Breaches of official duty render offenders liable to a fine of up to £100. The rule by which a returning officer had only a casting vote in the event of a tie was abolished in 1948, and his ordinary vote was restored. Now a tie is resolved by lot. Immediately after the declaration of the poll, the counted and rejected papers, together with all the other election documents, are sealed in separate packets and sent to the Clerk of the Crown. They are retained by him for 1 year, and then, unless otherwise directed by the House of Commons or the High Court, they are destroyed.

The Parliamentary Franchise.—Those entitled to vote as electors in a parl. election in any constituency are those resident there on the qualifying date, who are Brit. subjects of at least 21 years, and not subject to any legal incapacity to vote. Peers, aliens (except those who have been naturalised), persons under 21, or of unsound mind, or convicted of certain offences, are among those disqualified, but the incapacity of a peer to vote does not extend to peeresses in their own right, or peeresses by marriage who might otherwise be qualified. Registration on the register to be used at the election is a pre-requisite. The residential qualification was estab. by the Representation of the People Act, 1918, and 10 years later the Representation of the People (Equal Franchise) Act assimilated the franchise for men and woman in parl. E. The preparation of the register of voters, first provided for under the Reform Act, 1832,

is the duty of the registration officer (in the co. constituencies the clerk of the co. council, and in bors. the tn clerk). Registers are prepared once a year from details provided in a house-to-house inquiry conducted under the terms of the Electoral Registers Acts, 1949 and 1953. They contain a list of parl. and local gov. electors, and are pub. not later than 15 Feb. each year for use in the ensuing year beginning on 16 Feb. The qualifying date is the preceding 16 Oct. in England, Wales, and Scotland, and 15 Sept. in Northern Ireland. A person who is not of full age on the qualifying date, but is so on 15 June, is entitled to vote at elections in Great Britain between 2 Oct. of that year and 15 Feb. of the following year. Registers can be scrutinised at co. and tn halls or other council offices and head post offices. Persons whose names are omitted may claim registration, and objections to persons whose names appear may also be heard. Appeals against decisions of the registration officer are made to the co. court. Provisions are made for service voters—whether in the armed forces or some other branch of the Crown service overseas—including their wives who may be resident outside the U.K. Such persons make a declaration in a prescribed form and are treated as resident at the address specified in the declaration. The penalty for a false declaration is imprisonment up to 3 months, or a fine of £50, or both, on summary conviction, or up to 6 months, or a fine of £100, or both, on conviction on indictment. Service voters can vote by proxy or post on making application. Those unable to attend at the polling station because of occupation or infirmity may vote by proxy or post as absent voters. Separate lists are maintained of absent voters or those entitled to vote by proxy or post.

Petitions to unseat the member declared elected at a parl. election are made to the High Court in England, Wales, and Northern Ireland and to the Court of Session in Scotland within 21 days of the return being made to the Clerk of the Crown, or within 28 days where there is an allegation of any corrupt practices. A petition alleging an illegal practice must be lodged within 14 days of the receipt of the return and declaration of election expenses by the returning officer, or within 28 days of any payment or act in furtherance of such an illegal practice. Such petitions are tried by 2 judges of the High Court or Court of Session from a rota kept for the purpose. Their decision is made in writing to the Speaker. The penalty for corrupt withdrawal of a petition is a term of imprisonment not exceeding 12 months or a fine of £100 or both. A candidate at a parl. election who is reported by an election court guilty of a corrupt practice is incapacitated during 5 years from the date of the report from being elected for any constituency and during 10 years from being elected for the constituency for which the election was held. Persons convicted of corrupt practices on indictment are also subjected to a total incapacity to be elected for any

constituency for 5 years. If reported as guilty of such a practice through his agents or personally guilty of an illegal practice the candidate will be incapacitated from election for the constituency in which the election was held for 7 years, but this local incapacity lasts only for the duration of the Parliament for which the election was held if the candidate is reported guilty of an illegal practice through his agents. There are provisions for mitigation and remission of incapacities arising from further proceedings where the incapacity has arisen from the report of an election court.

Corrupt and illegal practices at elections.

—Corrupt practices are personation, bribery, treating, and undue influence. They are punishable either on indictment or summarily, and it is the duty of the Director of Public Prosecutions to investigate reports of such practices and institute proceedings. Personation is voting in person or by proxy for someone else whether alive, dead, or fictitious. It is a felony, and the penalty on conviction on indictment is imprisonment for a term of up to 2 years. If convicted by an election court the term is not exceeding 3 months or a fine of £200, or a term not exceeding 3 months or a fine of £100, or both. If convicted summarily. Bribery is the giving of money or procuring of office with the intention of corrupting the voter in the exercise of his or her vote; treating is the giving, providing, or paying wholly or in part for entertainment to influence any voter to use or refrain from using his vote; undue influence is the use or threatened use of force, violence, or restraint, the infliction of injury, harm, or loss to or on persons to induce or compel them to vote or refrain from voting, or by abduction, duress or by any fraudulent device or contrivance to impede or prevent the free exercise of the franchise. Any person convicted on indictment of any of these 3 corrupt practices is liable to imprisonment for a term of up to 12 months or a fine not exceeding £200. If convicted by an election court the term is up to 6 months and the fine £200, but in a court of summary jurisdiction the penalty is a term of up to 3 months, or a fine of £100, or both. The penalty for an illegal practice is a fine of not more than £100 on summary conviction. Illegal practices include voting or applying to vote by proxy when subject to legal incapacity, or for someone subject to such incapacity, or voting more than once, or voting personally when registered to vote by another method; making payments in contravention of provisions for payment of expenses through an election agent; failing to send a declaration or return of expenses; making payment or incurring expenditure in excess of the permitted maximum; paying claims or making payment of expenses outside the permitted time; candidate or agent failing to comply with provisions relating to returns and declarations of expenses; making a false statement of fact about the character or conduct of a candidate; use of foreign radio station for political

propaganda at an election; acting or inciting others to act in a disorderly manner at an election meeting; making false statement about the withdrawal of candidates; lending, letting, employing or hiring of cars to convey voters to the poll; payment for bands, music, torches, flags, or banners; printing, publishing, and distributing election materials not bearing the name of the printer and publisher. Other practices which are prohibited include the hiring, letting, or using of licensed premises for committee rooms, the employment of paid canvassers, and canvassing by police officers.

Qualifications and disqualifications for membership.—Membership of the House of Commons is remarkably free and unrestricted. Candidates must be Brit.

subjects, and at least 21 years of age. Persons who are disqualified from membership include: aliens (but not one who has been naturalised); infants under the age of 21; those suffering from lunacy or idiocy; Eng. or Scottish peers (but Irish peers unless elected as representative peers are eligible); bankrupts; convicted felons; those guilty of corrupt practices at election; clergymen of the Church of England, the Church of Scotland, or Rom. Catholic priests (but not non-conformist ministers); the holders of offices specified in the House of Commons Disqualification Act, 1957, deemed to be incompatible with election as an M.P. Those disqualified by virtue of office include judges of the High Court, the Appeal Court, and co. courts in England, Wales, and Northern Ireland, the Court of Session in Scotland, and the Courts-Martial Appeals Court; the recorders of London, Liverpool, and Manchester, or recorders in their own bors.; chairmen or paid deputy chairmen of quarter sessions in London or Lancs, or in their own area of jurisdiction; stipendiary magistrates; sheriffs or sheriff substitutes in Scotland; Official Referee to the Supreme Court; civil servants (whether estab. or not or employed whole or part-time—including foreign service and overseas civil services, but not the Royal Observer Corps unless the service is whole-time); any member of the armed services (but not an officer on the retired or emergency list or holding an emergency commission or on any reserve, or a pensioner recalled for service); any police officer employed by the police authority in Great Britain and Northern Ireland; any member of any legislature of any country or ter. outside the Brit. Commonwealth; returning officers (but only in constituency for which they act); commissioner of police for the metropolis and for the City of London; colonial governors; chairmen and members of courts, tribunals, boards, corporations, and councils set up under various acts of parliament; election commissioners; governors of the Bank of England, the B.B.C., or prisons; clerks or deputy clerks to co. co. bor., or bor. councils. A person who was previously barred from membership because of holding a pension from the Crown or because of any contract agreement or commission for or on behalf of

the Crown is no longer disqualified. The 1957 act laid down a detailed list of individual disqualifying offices in place of the former 'offices of profit under the Crown' to enable a prospective candidate to see clearly whether he had incurred, or was likely to incur, disqualification by the acceptance of an office. There is provision to amend the list by Order in Council.

LOCAL GOVERNMENT.—Local gov. franchise depends on residence in the area, or the possession of a non-residence qualification, i.e. the occupation as owner or tenant of rateable lands or premises of an ann. value of £10 or more, excluding occupation of furnished dwellings for less than 9 weeks, and excluding occupation as lodger. Those entitled to vote must also be Brit. subjects aged more than 21 years and not be subject to any legal incapacity. The preparation of registers is effected simultaneously with those for parl. election under the same procedure; as far as possible the same registers are used, with a mark indicating the voters entitled to participate in local gov. E. only. Most of the rules governing the conduct of local E. are the same as those for parl. election with appropriate variations or exceptions. In metropolitan bors. the tn clerk is the returning officer; in bors. where the election is in wards it is an alderman appointed by the council, but where the bor. is not divided into wards it will be the mayor; for co. councils he is appointed by the council, but in some circumstances may be the mayor of a bor. within the co. As in parl. election no person may give more than 1 vote for any 1 candidate. Petitions against E. must be presented within 21 days of the date on which they were held and are heard by a barrister of not less than 15 years' experience, but not one who is an M.P., or holds an office of profit under the Crown other than that of a recorder. In Scotland such petitions are heard by the sheriff or the sheriff substitute of the co. The maximum expenses in a local gov. election are £25 and 2d. for each voter on the register above 500.

Borough elections.—Where a bor. is not divided into wards there is 1 election of councillors for the whole bor.; where the bor. is divided into wards there is a separate election of councillors for each ward. Councillors are elected for 3 years, one-third going out of office each year. Aldermen are elected by the council for 6 years, half of them retiring at the end of 3 years. E. are in May. Women may be elected as councillors or aldermen.

City of London.—Common Council is legislative as well as representative. The Lord Mayor is nominated by livery voters of the City Guilds and elected by the Court of Aldermen. Aldermen and common councilmen are elected by ratepayers and inhab. of sev. wards, aldermen for life, councilmen being re-elected annually by the same voters. In 1952 the Common Council decided to reduce its membership from 206 to 159—or 25 per cent—by St Thomas's Day (21 Dec.) 1959. Casual vacancies occurring by death or resigna-

tion between 1 Jan. 1953 and the fixed day in 1959 would not be filled unless the representation of the ward fell below the number specified in the resolution reducing the numbers.

See also ELECTORATE; FRANCHISE, LOCAL GOVERNMENT. See J. F. S. ROSS, *Elections and Electors*, 1955.

Elections, Presidential (U.S.A.). By the Federal Constitution each state is to appoint a number of electors equal to the whole number of senators and representatives to which the state is entitled in Congress. These electors then vote for the president and vice-president. Theoretically, the people at large have no direct voice in the election, and the electors, or electoral college, have an unfettered freedom of choice. The party system ensures that the persons nominated at the great national party conventions for the offices of president and vice-president shall ultimately be voted for by the members of the electoral college. The electors themselves are polled for by a direct vote of the citizens on a 'general ticket,' but the candidates for the office of elector are all nominated beforehand by party associations, with the result that the choice of the new president and vice-president follows as a matter of course. By the Constitution Congress may determine the time of choosing the electors and the polling day. The election is held every 4th year. For qualifications of the president, see CONSTITUTION.

Electorate, the persons entitled to elect the representatives to the communal assembly. In England and other Teutonic lands the families enlarged into clans, occupying each its original common ter., early developed into the territorial unit of the *mark* or *township*. The township, then, was the lowest territorial div. and political unit of a tribe, and possessed its own assembly and peculiar political organisation. This unit, which in other countries is the commune, in England becomes either the *municipal corporation* or *par.* The electoral system of England (apart from the representation of the classes in the cos.) grew out of the principle of representation as evolved in the tns of the Middle Ages. Their adaptability to this end was due partly to the fact that even before the Conquest they possessed a complete political organisation, partly to the wealth that accrued to them from the grant of the charters of incorporation. Other territorial divs., such as the shire and the hundred, co-existed with the tn or bor., but in most cases the latter, especially after acquiring charters, were for all judicial and administrative purposes independent of those divs. The tns soon developed a strong organisation for administrative as well as judicial purposes, and, through the institution of merchant and craft guilds fostered by the crown, rapidly acquired wealth from their exclusive privileges of buying and selling free from exorbitant tolls and from corporate property. The guilds all tended to become the governing body of the tn and still further developed their privileges

of self-gov. and self-assessment. The result was that they became close corporations, election to which was coveted, and the representation of which in parliament was desirable. Parallel with the development of the bor. franchise, the co. representation was evolved through the elective principle of the old co. court (q.v.). In pre-Norman times the freeholders assembled in the co. court or shire-moot for fiscal and judicial purposes, and to the moot also came burgesses, and the reeves from the tns. Later the tn representatives seceded, having through the grant of charters gained a right to send out their own representatives to bargain with the exchequer officials. The co. freeholders continued to elect knights, who either assembled in the co. court or were summoned by the sheriff to some central point for the same purposes, or to be consulted about a grant. When this representation for purposes of assessment became a representation for deliberative purposes too, election to parliament in the modern sense began. At first tns did not appreciate the honour of sending members to parliament, and the representation, such as it was, was chiefly the co. representation of the classes. Many acts were passed in the beginning of the 15th cent. to regulate the franchise in the cos., and in 1430 an act restricted the right of voting for knights to persons possessing freeholds in the shire to the value of 40s. a year, and all copyholders and villeins were disfranchised. The forty-shilling freeholders remained the only co. voters until the Reform Act of 1832. In the intervening centuries, however, the bors., grown wealthy, began to realise the value of the right of election. Control over the royal expenditure meant the power to secure the redress of grievances. The Crown could increase or diminish the number of bors. represented—a power based on the doctrine that bor. privileges were gifts of the Crown, and that their status was historically that of the royal demesne; the number of shire knights, on the other hand, could not be altered. From this fact and the subsequent association of the knights with the burgesses as representatives of the people instead of the classes, the representation of the 3rd estate of the realm was saved from the extinction that the corresponding bodies encountered abroad. But the representation of the 3rd estate was as yet a far cry from the democratic ideal. The bors. rapidly became corrupt, the franchise passing into the hands of a close body of corporators who frequently sold the bor. seats to the king's ministers. By the beginning of the 19th cent. the bor. had practically ceased to represent public opinion. From the time of the Reform Act in 1832, which abolished the 'rotten' bors. and gave the vote to everyone occupying a house or shop to a clear ann. value of £10, a series of acts has extended the franchise. In 1884 the franchise conferred in 1867 on householders and lodgers in bors. was extended to similar persons in the cos. A year later the entire country was divided into numerous co. and bor.

constituencies, each co. being subdivided into 2 or more constituencies, each returning 1 member, the idea being to create equal electoral dists. The principle of div. adopted by the Redistribution of Seats Act, 1885, accorded with the democratic feeling that had grown since Rousseau preached equality. In the days of rotten bors., when the total pop. was only 7 million, of whom 5 million could not read or write, there were 558 members of the House of Commons, which means that each member represented on the average no more than 500 voters as against about 55,670 to-day. The net result of the reforms of the 19th cent. was an accession of power to the executive and the E. at the expense of the House of Commons. Before the Reform Act of 1832 a defeat of the ministry did not necessarily involve its resignation. Both the ministry and the majority in the House were for the most part in the confidence of the king. But after 1832 a general election became for the first time a vote to return a House pledged to support some particular politician, with the result that a change of ministry necessarily followed. This has subsequently developed into support for a particular political party and its programme, which is set out fully before the E., rather than for an individual politician. The distribution up to 1918 was far from perfect. The progressive shifting of the pop. and the huge absolute increase in the whole pop. since 1885 rendered the old distribution in numerous instances peculiarly inequitable and far removed from the spirit underlying the idea of equal electoral areas. The result was an agitation for various reforms, some having for their object the substitution of a purely personal for a proprietary qualification, others the representation of the political opinions of the minority. On the introduction of adult suffrage by the Representation of the People Act, 1918, the E. increased from 8,357,000 to 16 million, including 6 million women. The Representation of the People (Equal Franchise) Act, 1928, increased it considerably (see ELECTIONS), the large increase over 1918 being accounted for by reducing the age limit for women from 30 to 21 years of age and by giving all women the vote on equal terms with men. Permanent commissions for the redistribution of House of Commons constituencies were set up for the first time in 1944. Formerly such commissions had been appointed *ad hoc*, ceasing to exist on the completion of their task. The decision to put them on a permanent basis arose from a recommendation of a departmental committee on electoral reform in 1942, which was endorsed by the Speaker's conference in 1944. As the redistribution of constituencies in relation to the E. began to make itself felt rapidly and acutely, it became apparent that there was a great advantage in having permanent machinery to maintain constant reviews of constituencies, and where necessary effect periodical adjustments. The commissions are required by law to submit reports in not less than 3 or more than 7

years. The rules governing their reviews provide that the number of constituencies in Great Britain shall not be substantially more than 613, of which Scotland should have not less than 71 and Wales not less than 35. Discretion is given to them to depart from a strict application of those rules if special geographical considerations, including shape, size, and accessibility of a constituency, make that desirable. A far-reaching redistribution of seats—which included the abolition of plural voting, the ending of univ. representation after 345 years, and the amalgamation of representation for the Cities of London and Westminster—reflecting the social and industrial movements of the preceding decades, and hoping to achieve greater equality in the size of constituencies, was made in 1948 and put into operation at the general election of 1950. The number of seats in the House of Commons was reduced from 640 to 625. A further and considerable redistribution occurred before the 1955 election, arising out of the first review by the commissions under the House of Commons (Redistribution of Seats) Act, 1949. The number of constituencies was increased to 630. Eleven new divs. were created and 6 others abolished. Major alterations were made to 172 constituencies in England and Scotland, 43 minor adjustments being made to constituencies in England, Wales, and Scotland. No variations were made in Northern Ireland. The commissions in their task had sought to divide the total E. by the electoral mean of 55,670, and to avoid having any constituency of more than 80,000 or less than 40,000. The Eng. and Scottish bodies foreshadowed further adjustments in some areas in future, arising from drifts of pop. because of the development of new tns. Changes giving effect to the recommendations of the commissions are made by order in council.

The principle of equal electoral areas obtains in the U.S., Canada, and South Africa; other countries, like Switzerland, still adhere to the system of representation of com. or ter. divs. for administrative purposes, like the old Eng. shires, hundreds, and chartered tns. A system of double election prevails in the U.S.A. and in France. In the U.S.A. the E. elect the members of the Electoral College, which is thus composed of states' representatives, who elect the president. There are 531 votes in the Electoral College, and therefore 266 secure a majority.

See CABINET; FRANCHISE, LOCAL GOVERNMENT. See also J. F. S. ROSS, *Electors and Electors*, 1955.

Electors, the German Imperial (Kurfürsten), the princes in whom was vested the right of choosing the emperor or king of the Romans. Under the Carolingians the crown was hereditary, then Germany became an elective monarchy, and finally by 1257 the number of electors was fixed at 7. The Golden Bull (q.v.) of 1356 listed these as 4 lay princes, the Elector Palatine of the Rhine (imperial steward), the duke of Saxony (marshal), the mar-

grave of Brandenburg (chamberlain), the king of Bohemia (cup bearer), and 3 spiritual electors, the archbishops of Mainz, Trier, and Cologne (chancellors). During the Thirty Years War the duke of Bavaria was made an elector (1623) in place of the Elector Palatine, who was, however, restored as 8th elector at the Peace of Westphalia (1648) which finally established the electorate. In 1692 the 9th electorate of Brunswick-Lüneburg (recognised in 1708 as Hanover) was added. Changes took place during the Fr. ascendancy, and the electors' powers really came to an end (1806) on the dissolution of the Holy Rom. empire. The E. had considerable power during disputed successions, but gradually, and especially from the Thirty Years War onwards, the imperial crown became in practice largely hereditary. See O. Harnack, *Das Kurfürstenkollegium*, 1883; and E. Henderson's trans. of the 'Golden Bull' issued by Charles IV, 1356, in *Select Historical Documents of the Middle Ages*, 1896.

Electra (Gk 'the bright one'), daughter of Agamemnon and Clytemnestra, and sister of Iphigenia and Orestes (q.v.). She saved her brother from Aegisthus and Clytemnestra, who intended to kill him after Agamemnon, and later helped him to avenge Agamemnon's death. She married her brother's friend, Iphylades, and bore Medon and Strophilus. Her tomb was shown later at Mycenae.

Electric Accounting Machines, machines for book-keeping, calculations, statistics, and inventories. The punched card system of the Hollerith method permits business transactions of all kinds to be recorded, not in written books, but on specially designed manilla cards by means of perforations. The numerical significance of the holes is determined by their position in the cards. Cards can be designed for any purpose and information is recorded by a hand-operated key punch capable of very high speeds. Accuracy of punching is checked by a second operator in a verifying key punch. The punched cards—which form, as it were, mobile figures—can be classified, sorted or selected in an electrical sorting machine. After sorting, the cards are passed through a tabulating machine which will either list each individual card or, alternatively, accumulate totals of the sorted groups of cards and print these totals in appropriate forms. Invoices, statements, ledgers, and any kind of statistical return or inventory can be rapidly compiled by the Hollerith method, which eliminates subsidiary book-entries and produces results direct from the original record, the punched card. In addition to the advantage inherent in high speed the greatest flexibility in operation is provided by an easily manipulated control panel. Digital electronic computers of the type described in ELECTRONIC COMPUTATION are beginning to be used for book-keeping and other clerical jobs of a routine nature and are likely to play an increasingly important part in this role. With their inherent high speed of calculation and data-processing and large internal storage capacity for the holding

of and ready access to information regarding ledgers, records, files, reference tables, etc., they are very suitable for the rapid preparation of invoices, bills, demand notes, pay slips, statements, etc., with simultaneous analyses and the production of 'urgent action' notes and summaries as required. For input of new data such machines usually make use of punched paper tape, punched cards, or magnetic tape; for storage, magnetic cores, drums, and tape; and for output, typewriters or line printers. The problem to be solved must first be broken down into a series of basic operations, often conveniently specified by flow diagrams; the machine is then automatically controlled by means of a programme based upon these operations. The programme so derived can be used repeatedly and can be modified at any time to bring the operations in line with changing demands.

Electric Batteries, see ACCUMULATOR; CELL, VOLTAGE.

Electric Bells and Alarms. Chief parts of an ordinary E. B. are the electromagnets A and the armature C to which the knocker of the bell is attached. C is connected by a thin spring to the point D. At P there is a screw which makes contact with a spring attached to C. B represents the bell itself. The terminals T are connected to the external circuit. The action is as follows: initially the screw P is in

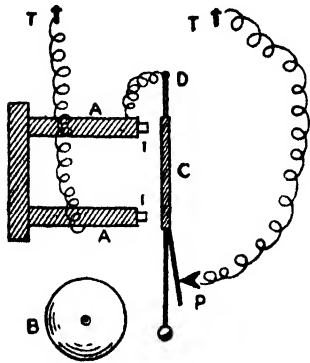


FIG. 1

contact with the spring attached to C; a complete circuit is formed as soon as a bellpush is operated and when the current flows the magnet becomes excited and attracts to it the armature C; this breaks the circuit at P, the current stops and the magnets then cease to attract C, which flies back under the action of the spring attaching it to D and again makes contact at P. In this way the circuit is alternately made and broken at P, thus giving to the armature C an oscillating motion which causes the striker to ring the bell B.

The above type is called an *electric trembling bell*.

Indicators.—When a number of push-buttons are installed in the same house, it is necessary to know which bellpush was operated to ring the bell. The indicator is a simple device designed for this purpose. It consists essentially of an electro-magnet M (Fig. 2) and an armature A pivoted at P, with a flag attached at its lower end. When the current passes the magnet is excited and attracts the armature, causing the flag to rotate about P. When the current stops the armature falls back under the action of gravity and continues to swing like the pendulum of a

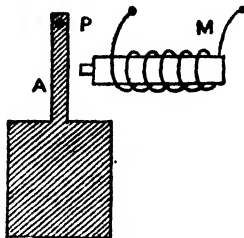


FIG. 2

clock for some time after the current has ceased to flow. One of these is put in series with the bell for each position of a push-button, and thus acts as a signal.

Burglar alarms.—These generally consist of devices so placed that any movement of a window or a door will close a contact and set a bell ringing. The bell continues to ring until a control switch is operated.

Fire alarms. See under FIRE BRIGADES AND FIRE-FIGHTING. For minor faults in household systems, see under HOUSEWIFERY.

Electric Cables, see CABLES.

Electric Circuit, see CIRCUIT, ELECTRIC.

Electric Coherers, see COHERERS.

Electric Condensers, see CAPACITOR.

Electric Conductors, see CONDUCTORS, ELECTRIC.

Electric Discharge, escape of electrons from a charged body due to high potential of the electrode, to low pressure of the surrounding gas, or both. The E. D. may take various forms according to the conditions in which it is produced or maintained. At atmospheric pressure, a brush D., consisting of a purplish glow with streamers, accompanied by a hissing noise, appears round a sharp point or edge and round a thin wire at high potential (see CORONA). A spark occurs between 2 electrodes in air when the voltage is of the order of 30 kV per cm. distance between them; the value depends on the manner in which the voltage is increased, whether gradually or as an impulse, on the shape and size of the electrodes, and the distance between them (see SPHERE GAP). The spark establishes a momentary conducting

path through the air, and if sufficient power is fed into the path to maintain the conductivity, the spark may develop into an arc (q.v.). In a tube with air at reduced pressure and with an electrode at each end, the brush D. occurs at lower voltage than in the open air, and as the pressure is decreased it passes into a spark, which again broadens into a steady purple glow, while a dark space appears at the negative electrode. A more copious discharge is obtained in a vacuum tube from a heated cathode consisting of an oxide-coated filament. See THERMIONICS; ELECTRIC LAMPS; RECTIFIERS.

Electric Distribution, see DISTRIBUTION, ELECTRIC POWER.

Electric Fence, a wire fence of galvanised steel charged by high-voltage, low-current impulses at the rate of 40 per min. from a special unit with a transformer, supplied from a 6-V. accumulator. One such unit can work a 20-m. fence. The shock to an animal touching the wire is harmless but deterrent.

Electric Furnaces, see FURNACES; METALLURGY.

Electric Fuses, see FUSES.

Electric Generator, see ELECTRIC MACHINES.

Electric Heating for domestic purposes is based on the generation of heat RI^2 by a current I in a wire of resistance R . The wire must withstand prolonged heating, in open fires up to 900° C., without deterioration, and is made of nickel-chromium or nickel-chromium-iron alloy. The heating-element in the smaller appliances, kettle, percolator, iron, is usually a coil of wire or ribbon wound on a mica sheet, the whole enclosed in metal casing. The immersion heater consists of a spiral of resistance wire in watertight sheathing, usually with a screwed boss and sometimes with a thermostat. *Space-heating* is direct heating of a room by convection heaters or radiators. In convection units the element is enclosed in a metal casing and the air heated by contact with the element is circulated and discharged into the room at about 120° F. Sometimes a fan is added. Radiators may be of the ribbed sectional pattern, filled with water or oil and with an immersion heater at the bottom, or they may consist of 1, 2, or 3 tubes along the skirting-board, also with immersion heater. Panel heaters of various sizes and shapes are available; low-temp. panel heaters (80–120° F.) are often embedded in the walls. The open E. fires consist either of a porcelain former with a heating spiral, or a large porcelain knob wound with wire and set in a bowl-shaped reflector, or a wire-wound refractory rod in a parabolic reflector. *Storage heating* of water in a tank for hot-water supply or central heating is by immersion heaters with thermostat or by electrode boilers (see FURNACES). For large tanks 3 immersion heaters are used, one on each phase of 3-phase supply. Electrically heated boilers of both types are widely used for industrial purposes in Norway and Sweden.

The table gives some indication of the power consumption of heaters.

Kettles . . .	250–300 W. per pint capacity
Iron . . .	500 W.
Open-coil fires . . .	0.7–3 kW.
Panel . . .	35 W./sq. ft.
Panel embedded . . .	25 W./sq. ft.
Convection unit . . .	2–30 kW.
Section radiators . . .	0.5–3 kW.
Tubular radiators . . .	60 W./ft run
Immersion heater . . .	1–3 kW.

See also HEATING.

Electric Indicators, see ELECTRIC BELLS AND ALARMS.

Electric Insulators, see INSULATORS.

Electric Lamps.—*Arc Lamps*.—The intense light produced by the carbon arc (q.v.) was first observed by Davy (1810). When E. supply became available, arc L. were widely used for public lighting, but their use is now confined to projectors, medical applications, and, especially, cinemas, where very intense light is required. In the high-intensity arc, the carbons are copper-coated and the positive core contains some rare earths which assist in forming the crater and produce a very intensely luminous ball of gas. With a current of 60 amp. the carbons burn at a rate of 11 in. per hr and a small motor is needed for automatic continuous feeding of carbons. The d.c. arc on 40 V. gives the steady light required, with ballast resistance. A motor generator or a mercury-arc rectifier converts the mains a.c. supply into d.c.

Discharge Lamps.—These consist of a glass or quartz tube with 2 electrodes filled with a gas. The light is produced by the collision of electrons emitted from the cathode with the molecules of the gas. All discharge L. have, like the arc (q.v.), a falling volt/ampere characteristic and must be connected in series with a current-limiting device, usually a choking-coil, since they are mostly used on a.c. In the hot-cathode type, the emission is aided by the heating of the cathode when discharge is started, and these L. burn on mains voltage. The sodium vapour lamp is of U-tube form, of special glass to withstand attack of the vapour, enclosed in a vacuum flask. There is a filling of neon to start the discharge. The lamp emits a bright yellow light. It is highly efficient but not suitable for indoor use. The mercury vapour lamp emits a bluish-green light containing a large amount of ultra-violet (invisible) radiation. If fluorescent powder is deposited on the inside walls of the tube, the powder is excited by the ultra-violet rays, and by suitable choice of powders the colour is improved and full use is made of the radiation. In the low-pressure type there are 2 electrodes and a small amount of argon to assist the starting, which requires a special starting-switch arrangement. The high-pressure lamp has 2 main and 1 starting electrodes in argon filling. The cold-cathode type requires high-voltage supply, obtained through a transformer. The filling is neon or mercury vapour and fluorescent

powders are used. Discharge L. are the most efficient types at present available.

Incandescent Lamps.—The first electric filament lamp, invented by Joseph Wilson Swan of Sunderland and, independently, by Thomas Edison (1878), had a carbon filament in an evacuated glass ball. Modern incandescent L. have mostly a tungsten coil in an evacuated or a gas-filled bulb. The gas is usually nitrogen or argon; it must be inert and is used to counteract deterioration of the filament at high temps. *See also LIGHTING.*

Electric Lighting and Wiring, *see ELECTRIC LAMPS; ELECTRIC HEATING; FUSES; SWITCH; also ELECTRICITY IN THE HOME; LIGHTING.*

Electric Machines. (1) When a coil is moving in a magnetic field so as to embrace a varying flux, an e.m.f. is induced in the coil, proportional to the number of turns and the rate of change of the flux. (2) When a coil carrying current is placed in a magnetic field, the action between the field and the current tends to move the coil. These are the principles of (1) generators, converting mechanical into E. energy, and (2) motors, converting E. into mechanical energy.

If a coil is rotating in a linear magnetic field, the e.m.f. completes 1 cycle of a sine-wave in 1 revolution (*see ALTERNATING CURRENT*). The same effect is obtained with a stationary coil and a rotating magnetic field. In modern alternators a number of coils are fitted into slots in the inner surface of a laminated 'stator' frame (Fig. 1) and the field

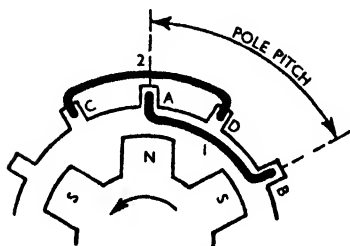


FIG. 1

system, the 'rotor,' is excited from a low-voltage d.c. generator usually mounted on the main shaft, the terminals being connected to brushes bearing on sliprings connected to the field windings of the rotor pole pieces. Thus sliding contacts are confined to the low-voltage circuit and the heavily insulated armature circuit is stationary. A coil placed similarly to coil 1 with respect to another pole-pair has an induced e.m.f. synchronising with that in coil 1. The spacing of the coils bears a definite relationship to the pole-pitch of the field magnets, so that the e.m.f.s induced in each of the series of coils shall simultaneously attain their maximum values. The e.m.f. in coil 1 is a maximum in the position shown, and the cycle is completed (Fig. 2) when the next N-pole comes under slot A. The

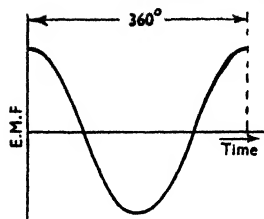


FIG. 2

number of cycles per sec., the frequency $f = \frac{1}{60} \times (\text{r.p.m.}) \times (\text{number of pole-pairs})$, or, at the usual frequency 50 c/s, the $(\text{r.p.m.}) \times (\text{numbers of poles}) = 50 \times 60 \times 2 = 6000$. Steam turbines run at high speed, 1000–3000 r.p.m., and 'turbo-alternators' have from 2–6 poles, and rotors of smaller diameter. The spaces between pole pieces are often filled in with wood to give a smooth surface. Water turbines turn slowly, and the rotors have from 12–24 ('salient') poles corre-

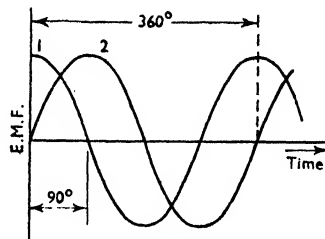


FIG. 3

sponding to a speed of 500–250 r.p.m. A rough estimate of the power in kVA is $4.65 \times n D^2 L$, where $n = \text{r.p.m.}$, $D = \text{internal stator diameter (metres)}$, $L = \text{axial length (metres)}$. At present the usual voltage is of the order of 10 kV; the power of large machines may be 60–80 MVA or more. If a 2nd series of coils are fixed like coil 2 (Fig. 1), the e.m.f. induced in these will lag behind the e.m.f. in coil 1 by $1/4$ period (Fig. 3), and if 3 sets are fitted (Fig. 4) the e.m.f.s will differ by 120°

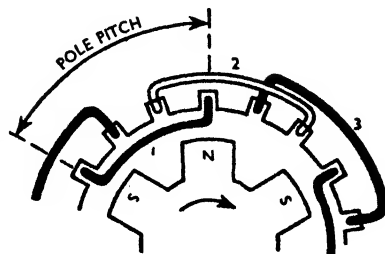


FIG. 4

degrees in phase (Fig. 5). There are then 3 independent circuits. The 3-phase alternator is now the usual type (see **THREE-PHASE SYSTEMS**). The 3 circuits are so connected that they have 1 terminal in common, the 'neutral point' (n.p.), so that the phase voltages, from the

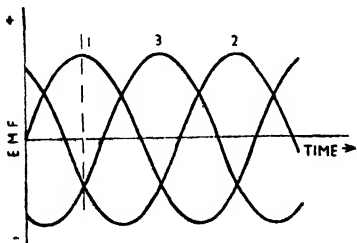


FIG. 5

other terminals to the n.p., are at 120 degrees to one another. The n.p. is often earthed.

Direct-current generators (dynamos) have a stationary (usually 4-pole) field, a cast-iron yoke with pole pieces projecting inwards to the armature and carrying the field windings. The rotating armature has a soft-iron core with axial slots for the

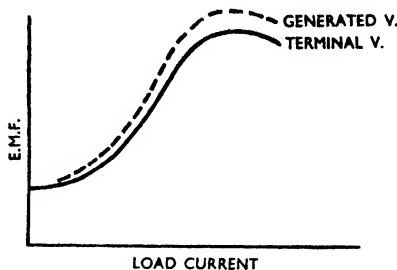
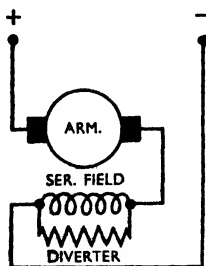


FIG. 6

conductors. The coil ends are taken out to commutator (q.v.) segments on which fixed carbon brushes are bearing. The commutator is a copper cylinder fixed on but insulated from the shaft and split axially into strips (segments) insulated from one another. The moment the e.m.f. in a coil changes sign through zero the segments change brush, so that the voltage between 2 brushes remains unidirectional. The series generator has the field winding in series with the armature (Fig. 6), so that when the load current increases, the field also increases and the voltage rises as shown in the characteristic. When saturation of the field core is reached, the voltage drops. This type of machine finds but very little use.

Shunt-wound dynamo field connections are shown in Fig. 7. A rheostat is inserted in the field circuit for controlling the field current and thus the voltage of the dynamo. The terminal voltage is a maximum on open circuit and falls as the load increases. This drop is due to an increase in armature current, the demagnetising effect on the field of the increased armature current and the reduction in the field current consequent upon the lower terminal voltage (Fig. 7). These machines are suitable for steady load conditions and where the voltage variation is of no importance. They are used for exciting the field windings of alternators and rotary converters, and for battery charging.

Compound-wound dynamo field connections are shown in Fig. 8. There are 2 windings, one in series with the armature and a shunt winding across the brushes. The shunt winding maintains the voltage at no load and the series winding provides additional field strength to compensate for the voltage drop on load. By suitably proportioning the series winding in relation to the shunt winding, the voltage characteristic can to a great extent be controlled. Fig. 8 shows characteristic curves for a compound wound dynamo (see **COMPOUND WINDING**).

When a dynamo is required to supply power at some distance over-compounding is necessary to compensate for the in-

creased line voltage drop at the higher loads.

When a generator supplies current to an external circuit, the current in the armature reacts on the field and the reaction is such as to oppose the motion; the greater the load, the more mechanical power is needed to drive the generator. In d.c. generators, the field produced by the armature current is superposed on the generator field, and the resultant distortion is balanced by 'interpoles' between the main poles (see **COMPENSATING COIL**).

A machine designed as an alternator will run as motor once it is started and run up to 'synchronous' speed as determined by the number of poles and the frequency of the armature supply. The

synchronous motor may be made self-starting by fixing a small induction-motor rotor on the shaft, but it can only act as motor, taking load, at synchronous speed. If overloaded it stops. If the field is not fully excited, the supply cur-

to 5 h.p. need no starting device and are connected straight to the mains. Single-phase induction motors need a 'phase-splitting' device for producing a quasi-rotating field at the start. Induction motors are used for lifts, cranes, machine

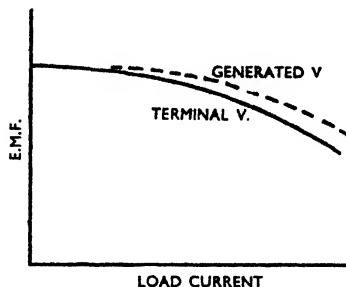
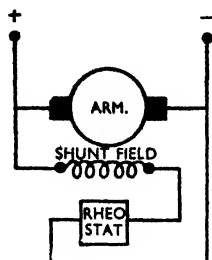


FIG. 7

rent 'lags' behind the voltage; if over-excited, the supply has a leading power factor. In networks containing a large number of induction motors and where a low (lagging) power factor is causing trouble (over-load) the installation of an over-excited synchronous motor 'improves' the power factor (q.v.) and thus

tools, textiles machines, and in electric traction. The commutator motor is a series-wound motor; as both field and armature current follow the same cycle and reverse together, the action between field and armature remains unidirectional. Single-phase motors are used in traction, and small motors for domestic appliances

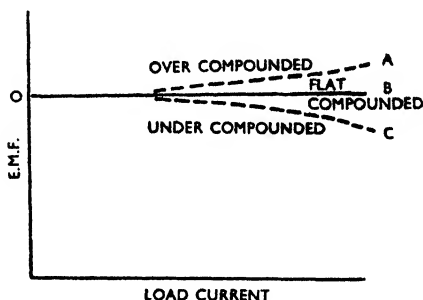
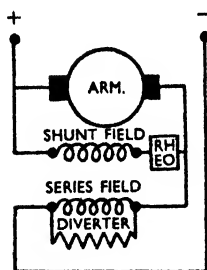


FIG. 8

relieves the network. Apart from this use as 'phase-advancers,' synchronous motors are used as motor generators for driving fans, paper machines, centrifugal pumps, and in electric clocks. The stator of a 3-phase induction motor is supplied from the a.c. mains and the result of the 3 e.m.f.s in the phase windings is a rotating field. The rotor is a drum of copper conductors connected at the ends to a ring ('squirrel-cage' motor). The action of the rotating field on currents induced in the rotor conductors makes the rotor follow the field with a small time lag or 'slip,' dependent on the load. The induction motor is simple and robust and will start on load. Motors up

are usually commutator motors and can be used on both a.c. and d.c.

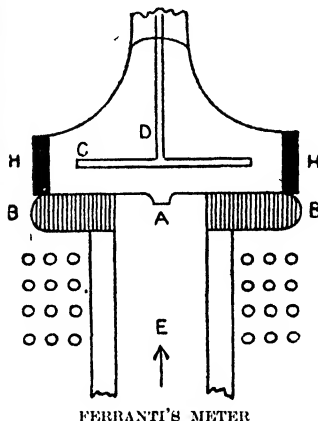
The design of a d.c. motor is in principle as that of a generator and all 3 types of field winding are used. The action of the field on the current-carrying armature coils sets the armature in motion, but once the armature is rotating the field also generates an e.m.f. in the coils, opposing the motion, the 'back e.m.f.' The volt drop across the armature is the difference between the supply volts, V , and the back e.m.f., B . If the armature resistance is R , the armature current I , $B = V - RI$. The back e.m.f. is proportional to the magnetic flow Φ and the speed N , constant $\times N\Phi$. Thus, if V and I

are constant and the field Φ is weakened, the speed increases. A shunt motor has a nearly constant speed; the field is across the mains and must be switched on first. The armature must be switched on through a resistance which is gradually cut out as the speed—and thus B —increases. The shunt motor thus does not start on load. As the load increases, the speed drops slightly and the current increases. The motor is protected against overload by a relay which opens the circuit at a maximum current value. The various precautions on starting (and re-starting) are taken care of in the usual motor-starters. In the series motor, the armature current is also the field current and on no load ($I = 0$, $V = \text{constant} \times N \times \phi$) the speed would become infinite. Series motors have a high starting torque and are eminently suited for traction purposes. A series motor is usually started by a controller (q.v.).

See H. Cotton, *Design of Electrical Machinery*, 1934; M. G. Say and E. N. Pink, *The Performance and Design of Alternating Current Machines*, 1943; A. E. Clayton, *The Performance and Design of Direct Current Machines*, 1945; A. J. Coker, *AC Motors and Control Gear*, 1945.

Electric Meters. Instruments for routine measurements of current, voltage, power, and energy. *Ammeters* and *voltmeters* are based on the same principles and are similar in design: the current in a fixed resistance is also a measure of the volt drop. The ammeter is always connected in series in the circuit in which the current is to be measured, the voltmeter is connected straight across the terminals between which the voltage is required. In the moving-coil M., a coil carrying the instrument current is pivoted in the field of a permanent magnet, the movement being controlled by springs which also serve as loads for the current. The deflection of the coil is proportional to the current. A pointer is fixed on the coil. The meter can only be used on d.c. The scale is uniform. The moving-iron meter has a pivoted iron vane carrying the pointer, the vane is attracted into a coil carrying the instrument current, with a force dependent on (current)². The meter can be used on both d.c. and a.c. The dynamometer, mainly used as voltmeter, has a fixed and a moving coil, both carrying the instrument current, and the deflection of the coil moving in the field of the fixed coil is thus independent of the direction of the current. The rectifier instrument is a combination of a circuit with 4 copper-oxide rectifiers and a moving-coil meter. The instrument is intended for use on a.c. and the scale graduation is in root-mean-square values (see ALTERNATING CURRENT) although the rectified values are mean values. When used on d.c. the scale readings are therefore too high by 11 per cent. In the hot-wire meter the expansion due to heating (RI^2) of the wire carrying the instrument current is trans. into deflection of a pivoted pointer. In the thermocouple meter the e.m.f. generated at the junction by heating due to the instrument current is

measured by a moving-coil meter. Both thermal instruments can be used on a.c. and d.c.; the latter is particularly suitable for weak h.f. currents. *Wattmeters* have a fixed coil taking the current in the circuit and a high-resistance volt coil connected to the supply terminals and moving in the field of the current coil. This type can be made to read accurately on both d.c. and a.c. In the induction wattmeter the current coil and the voltage coil are both wound on fixed iron cores set at an angle to one another. The (alternating) current field generates eddy currents in a pivoted spring-controlled disc, which interact with the voltage coil field, and

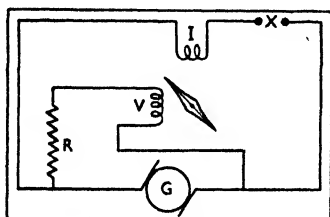


the equilibrium position of the disc depends on the product of the 2 fields. *Quantity meters* measure the quantity of electricity in a d.c. circuit, e.g. the ampere-hours (Ah) used in charging an accumulator (q.v.) or obtained on discharge. In one type, the fall of level of a solution of caustic soda in a graduated tube measures the electrolytic action of the current. The diagram shows a sketch of Ferranti's meter. HH is an electro-magnet with a steel core E. This forms a uniform field inside an iron ring HH, filled with mercury in contact with the electro-magnet only at a point A. A light fan C is suspended in the mercury. The current passes along E to the mercury through A, and then radially to the ring HH. This causes the mercury to rotate, taking the fan with it. The driving force varies as the (current)². The fluid resistance on the fan varies as the (speed)². Thus, the speed of the fan varies as the current, and the number of revolutions varies as the quantity of electricity.

In a d.c. circuit on constant voltage, the current is a measure also of power, and the quantity is a measure of energy. Hence quantity M. also serves as energy supply M. In a.c. supply, energy M. are mostly of the motor type, the rotating armature being

connected with a revolution counter. The field coils carry the whole current, the armature only a shunt current; a resisting torque varying as the speed of the armature is supplied by a 'brake disc.' The number of revolutions of the armature then measures the energy supplied. In the induction meter, both current and voltage coil are wound on fixed iron cores as in the induction wattmeter (see above), but the motion of the disc is not restricted, its revolutions are counted and give the number of watthours.

The range of an ammeter may be extended by means of extra shunts. These are often included in the instrument and extra terminals are provided, with indication of the factor with which the readings must be multiplied. The ranges of voltmeters are extended by high resistances in series.



OHMMETER

Standardisation of an ammeter is carried out by comparing the ammeter reading with a current-determination by measurement based on different principles. In the electrolytic method, using the silver voltameter, the measurement of current is reduced to the weighing of silver deposited and determination of time. In the Kelvin balance the attraction between coils through which a current is passing in opposite directions is measured against a mechanical force, and thus the current strength is measured. Voltmeter readings may be compared with the Weston cadmium standard cell, which has a voltage of 1.0186 V at 20° C, by means of a potentiometer (q.v.). Standard resistances are available, and with the help of these an ammeter can be standardised when a standard voltmeter is at hand, or *vice versa*. Resistance is usually measured on the Wheatstone bridge in its compact form of the P.O. box (see WHEATSTONE BRIDGE). For routine testing of insulation resistances of installations, etc., which normally are of the order of megohms (10⁶ ohms), the ohmmeter or 'megger' is used. The original form has 2 coils fixed with their axes at right angles, one in series with the unknown resistance X, the other, a high-resistance coil, across the 'supply'—a small hand-operated generator G, with permanent magnet field. At the intersection of the coil axes is pivoted a magnetic needle with a pointer. Turning the generator handle the needle is under the action of 2 forces

at right angles, one due to the volt coil, the other to the current, and takes up a position such that the tangent of the angle of deflection equals the ratio of the 2 forces, i.e. $V/I = X$ (see GALVANO-METER, *Moving-magnet*). In the modern Evershed-Vignoles megger, the 2 coils are fixed on a pivoted frame carrying the pointer and the magnet is fixed. The handle is provided with a slipping clutch.

Frequency meters for power-supply frequencies are mostly of the vibrating-reed type. A set of reeds of graded natural vibration frequencies are fixed at one end, the free ends facing the graduated glass scale at the front of the meter. When the whole system is electro-magnetically excited by connection to the supply, that reed vibrates whose natural frequency equals the supply frequency, and the vibrating end shows as a vertical band on the scale. The high frequencies used in radiocommunication are usually measured on a wavemeter (q.v.).

Electric Motors, see ELECTRIC MACHINES.

Electric Potential, see POTENTIAL, ELECTRIC.

Electric Power Generation, see POWER STATIONS.

Electric Power Transmission, see TRANSMISSION, ELECTRIC POWER; DISTRIBUTION, ELECTRIC POWER.

Electric Railways, see RAILWAYS.

Electric Ray, see TORPEDO.

Electric Strength, a measure of the insulating quality of a slab of material, and proportional to the thickness of the slab. If a 1 cm. thick slab is placed between 2 electrodes and the voltage between them is gradually increased, the maximum voltage that can be applied without causing any puncture in the material is the E. S. expressed in V/cm. Amer. writers often use V/mil.

Electric Supply, supply of energy in electric form, has become a vital factor in the life of a developing country, a country with a rising standard of living. Development depends on increase in production, and as the increase in working pop. becomes stagnant, the lack must be made good by increased mechanisation. In a highly industrial country like Sweden, production increased between 1939 and 1953 by 52 per cent, the number of workers by 15 per cent, and industrial consumption of power by 102 per cent. For every worker employed, industry uses 20,000 kWh per annum as against 17,000 kWh in the U.S.A. and 7500 kWh in W. Germany. Similarly, the scarcity of domestic service has led to extensive mechanisation of the home. Domestic and other private consumption is nearly 1/4 of the total in Switzerland, Norway, and Sweden. Over-all consumption per inhab. is in

France . . .	1030 kWh per annum
Germany . . .	1100 " " "
Great Britain . . .	1500 " " "
Italy . . .	470 " " "
Norway . . .	5600 " " "
Sweden . . .	3200 " " "
Switzerland . . .	3000 " " "
U.S.A. . .	2850 " " "

Total consumption of E. energy in Europe and America rises by c. 6 per cent per annum—it doubles in 12 years. The basic need of a country is thus an adequate supply of energy, available at all times, at any place where it is to be utilised. Natural sources of energy are fuel and water-power. Rising prices and dwindling of resources urge economy in use of fuel, and exploitation of available water-power. Efficient use of fuel is possible only in modern large-scale plant; transport and distribution to individual consumers is wasteful—sometimes uncertain. Thus the problem of utilisation of natural resources, and of energy S., becomes a national problem, beyond the powers of the local independent authority. Both fuel and water-power are unevenly distributed. The table shows recent estimates of water-power resources (from the Swedish Association of Supply Companies).

pattern is, of course, somewhat different in other countries. In Sweden the bulk of water-power is in Norrland, the extreme N., from where at present 6 double-circuit 220 or 380 kV trunk lines run to mid-Sweden's industrial dists., there interconnected with the S. systems. All the W. European countries are interconnected, and exchange of E. energy takes place across the frontiers, though the system is not worked as a complete 'Grid' with central control. Connection with the Brit. Grid by submarine cable across the Channel would enable Great Britain to profit from connection with Fr. water-power stations. In the future, E. S. may become an international problem. See HYDROELECTRIC POWER; INTERCONNECTION; POWER STATIONS; GRID SYSTEM.

Electric Traction, application of E. power to driving of vehicles. The power may be generated on the vehicle itself by

	Installed power MW	Exploitable water-power, MW	
		at minimum flow	at average flow
Africa	920	184,000	630,000
Asia	11,000	114,000	636,000
Europe	40,300	46,900	162,000
North America	38,700	67,800	242,000
South America	3,050	46,100	460,000
Oceania	1,440	17,200	134,000
Total	95,110	476,000	2,264,000

Since neither water-power nor fuel is always found where it can be immediately utilised, it becomes necessary to convert the energy in the natural sources into some form suitable for transport and distribution to consumers. E. energy has the advantages, given a well-designed network and adequate primary energy, of being always available—on 'tap'—when and where wanted, requiring no storage, no handling, being easily turned into light, heat, motive power, or used for electrolytic processes, being easily distributed over the premises. From the suppliers' point of view, the advantages lie in effective adjustment to varying demand through central control, possibilities of automatic regulation, and of continuous supervision of the working of the system from the central control. It is significant that though fuel, transport, steel, copper, building, and wages have increased enormously in cost, the rise in price of the kWh is (in Great Britain) very small. In many countries nil. The problem of continuous supply of energy thus becomes a problem of constructing a transmission network linking up a number of suitably placed power stations (q.v.), and including regional substations from which distribution lines supply tns, industry, rural dists., and railways. Such is the 'Grid' (q.v.) in Great Britain. The

accumulators, as in the delivery vans, or by an internal-combustion engine, usually a Diesel, as in railcars and locomotives (q.v.). In both cases the motors are d.c. series motors. When power is obtained from the ordinary high-voltage 3-phase supply, it may be converted to d.c. by rotary converters or mercury-vapour rectifiers in substations along the track. The supply to the cars or trains is usually 600 V. for tramcars and general suburban lines, 1500 V. for suburban locomotives, and 3000 V. for longer-distance trains. At 600 V. the (series) motors are supplied at full voltage, at the higher voltages they are connected 2 and 2 in series. At the lower voltages the power may be supplied by a 2rd rail on which slides a contact shoe as collector, the track rails forming the return conductor. At higher voltages overhead lines are used. For trains, special suspension of the contact wire is needed to avoid sparking at the high speeds used. A 'catenary' wire is suspended from the pylons, and from the catenary the contact wire is suspended by a number of wires of unequal lengths, taking the sag of the catenary into account, so that the contact wire hangs horizontally and is nowhere rigidly supported. Sometimes an auxiliary wire is used, suspended horizontally from the catenary and carrying the contact wire.

The current-collector is usually a pantograph controlled by 2 sets of springs and a compressed-air cylinder and piston. The portion making contact with the wire is a graphite-greased aluminium bow. In a.c. traction systems the motors are usually single-phase commutator motors, the frequency is 16 $\frac{2}{3}$ or 25 c/s. The fuel supply voltage is carried by the contact wire and stepped down by transformers on the locomotive. Substations are thus avoided, and voltages up to 33 kV may be carried by the contact wire.

Experiments are in progress on the use of a.c. transmission at 50 c/s with germanium or mercury-vapour rectifiers on the locomotive supplying d.c. motors. In N. Italy there are sev. 3-phase systems of which the most notable is the Genoa-Milan railway, which employs 3000 V, 3-phase current, all of which is obtained from hydroelectric power stations.

Trolleybuses require 2 overhead lines, 1 for the supply and 1 for the return current, and consequently 2 trolleys. The wires are usually 4/0 S.W.G. hard-drawn copper. Ministry of Transport regulations stipulate that the supply line shall be completely insulated, the return line earthed at the station but otherwise insulated. Other paragraphs of the regulations specify the maximum permissible leakage current (0.01 A per m.), sectionalising of lines (0.5 m. maximum) and routine insulation testing. The supply is protected by circuit-breakers and over-current relay. The vehicle has usually 1 motor only, though some designs use 2, mounted forward or in the middle of the chassis. The motor power varies between 50 and 80 b.h.p. according to seating capacity (35-66) and wheel base (4 or 6 wheels). The motor is d.c. series-wound or, if regenerative braking is used, compound-wound. Some types use a series motor with double armature for series-parallel working. The voltage preferred in Great Britain is 500 V. A hand brake is always fitted and where regenerative braking is not used rheostatic or vacuum brakes are supplied. The trolleybus must be turned at the terminals, and where no loop circuit through adjoining streets can be provided, a turning circle must be made in the road. Some buses are provided with an accumulator battery for manoeuvring independently of the overhead for short stretches. A trolleybus was first used experimentally in the U.S.A. in 1882 and during 1900-12 various lines were operated both on the Continent and in England (Keighley, Bradford, Leeds). But the modern large-scale development in design and application dates from 1926, when the first 6-wheel double-deck buses with pneumatic tyres, built by Guy Motors Ltd., were put into operation in Wolverhampton. This system has remained the model of passenger transport service and was soon followed by replacements of trams by trolleybuses and installation of new routes in Great Britain, on the Continent, and overseas, earning for England the name of 'the Home of the Trolleybus.' Of all heavy

vehicles the trolleybus is the least noisy. Unlike the tramcar, it loads and unloads its passengers at the kerb and is not confined to a track, but can give way to other traffic. Unlike the petrol bus, it emits no fumes, its maintenance costs are low, since the smooth acceleration of the electric motor causes less wear than the jerky gear-changing, and the fire risk is low. Moreover, it constitutes a valuable load balancer on the E. power station. (See Brit. Standard Specification 173.)

(See also RAILWAYS; TRAMWAYS. See A. T. Dover, *Electric Traction: a Treatise on the Application of Electric Power to Tramways and Railways*, 1929.)

Electric Waves, see ELECTROMAGNETIC WAVES.

Electric Welding, see WELDING.

Electric Wiring, see ELECTRICITY IN THE HOME.

Electrical Fume Precipitation, see FUME PRECIPITATION.

Electrical Units, see UNITS, ELECTRICAL. **Electricity, Atmospheric**. The occurrence of lightning and thunder shows that the atmosphere is in a state of electrification. This was shown by Franklin, and also by Dallard, some 150 years ago, using an ordinary kite. Subsequent investigation has shown that such a separation of electric charge, with its consequent electric field, is always present even in fine weather. The earth's vertical electric field (or potential gradient) is the quantity most easily measured, and it is found to vary diurnally and seasonally in a fairly regular way, and to vary irregularly with the local meteorological conditions. The older techniques measured it directly by allowing an exposed conductor at a known height above the earth's surface to attain the potential of its surroundings, which potential was then measured by means of a quadrant or capillary electrometer. More recently electrometer valves have been used as potential measuring devices, and radio-active conductors have been employed to improve the rate of attaining potential equilibrium, although serious errors are possible with such conductors, especially in windy conditions. A modern technique is to measure the surface charge density induced by the earth's potential gradient. A horizontal plate at the earth's surface is grounded through a resistance, and is successively covered and uncovered by an earthed screen. Alternating potentials occur across the resistance which can be amplified and detected in the usual way. This method does not give the sense of the earth's field unless a phase sensitive rectifier is used.

The normal 'fine weather field' of the earth is of the order of 100 volts/meter directed downwards, i.e. the earth's surface charge is negative. It is lower over the oceans than over land, is higher in foggy weather than in clear conditions, and decreases with altitude. On account of the presence of ions, caused by cosmic and solar radiation (see COSMIC RAYS), the atmosphere has a small but finite conductivity, and it is estimated that the total current flowing to the earth's surface

is about 1800 amperes. This current would neutralise the earth's surface charge in about 1 hr unless there were some other process tending to maintain the charge. It is thought that this reverse current is due to thunder-storm activity.

A typical thunder cloud is negatively charged at its base, and positively charged near its top. If it discharges to ground from its base the negative charge which is brought to the earth will tend to maintain the surface charge. The average current per storm centre has been found to be about 0.3 to 0.6 amperes, so that the continuous activity of some 4000 storm centres would be sufficient to maintain the surface charge. This figure is in good agreement with direct observations on the number of storm centres, and the diurnal variation of thunder-storm activity and the undisturbed potential gradient are closely related, both having a maximum about 18.00 G.M.T.

Many theories have been put forward to explain the mechanism of charge separation in thunder clouds. Some of these involve the breaking of falling water drops, whilst others consider the rain to carry downwards the ions on which its drops have condensed. No theory which is entirely satisfactory has yet been advanced, but that of Simpson and Scrase has achieved some success. It is known that if 2 similar insulators are rubbed together they acquire a negative charge, leaving the air positively charged. If the collisions between falling ice crystals showed this effect the negative charge would be carried to the base of the cloud as is observed. Although there is no direct experimental evidence that ice crystals can acquire a charge by such a collisional process, there is indirect confirmation in the facts that the region of maximum charge separation is at a temp. below the ice-point, and that exceptionally high fields are characteristic of polar blizzards. *See also* LIGHTNING; METEOROLOGY; THUNDER-STORM.

Atmospherics.—Owing to the very rapid growth of radio communication, the question of A. electrical disturbances and their minimisation is very important. Space is always agitated by electric disturbances, due to ionisation by the wind or the sun's rays, or by thunder-storms, with their electric discharges, or by cosmic ray effects. In tropical regions these 'atmospherics' or 'statics,' as they are called, become very prevalent, owing, no doubt, to the great heat of the sun. The disturbance itself is an impulse of E. of exceedingly short duration, and in a radio receiver gives rise to an unpleasant crackling and hissing sound. In the case of receiving signals which have to pass over large expanses of ocean, these static disturbances sometimes make reception impossible: were it not for these statics, trans-oceanic communication could be carried out on ordinary wave-lengths and on a power of 1 kilowatt. The interference can be eliminated to a certain extent by the use of well designed aerials (q.v.). Lightning used to be a very serious problem to the overhead trans-

mission engineer, but this interference has been overcome by the use of choke coils in series with the line, and also by surge absorbers which are large condensers and, as their name implies, absorb the resultant surge in a line when it is struck by lightning. *See* ATMOSPHERICS.

See J. A. Chalmers, *Atmospheric Electricity*, 1949; B. F. J. Schonland, *Atmospheric Electricity*, 1953.

Electricity and Magnetism. *see* ELECTRIC HEATING; ELECTRIC LAMPS; ELECTRIC MACHINES; ELECTRIC SUPPLY, etc.; ELECTROSTATICS; MAGNETISM; CURRENT ELECTRICITY; ALTERNATING CURRENT; CIRCUIT. **ELECTRIC.** **ELECTROMAGNETIC WAVES;** INDUCTION, **ELECTROMAGNETIC;** **ELECTRICITY, ATMOSPHERIC;** **ELECTROLYSIS;** **THERMOELECTRICITY;** **ELECTRIC METERS;** **PHYSICAL CONSTANTS;** and **GALVANOMETERS.**

For further reading in each of these subjects, *see* the relevant sections of E. C. Stoner, *Magnetism and Matter*, 1934; G. R. Noakes, *Text-book of Electricity and Magnetism*, 1950; H. W. Heckstall-Smith, *Intermediate Electrical Theory*, 1950; L. F. Bates, *Modern Magnetism*, 1951; H. G. Mitchell, *Textbook of Electricity*, 1952; J. H. Fewkes and J. Yarwood, *Electricity and Magnetism*, 1956; L. Page and N. I. Adams, *Principles of Electricity*, 1956; C. A. Coulson, *Electricity*, 1956. *See also* M. Faraday, *Experimental Researches in Electricity*, 1839–1855; J. Clerk-Maxwell, *Electricity and Magnetism*, 1873; J. J. Thomson, *Elements of the Mathematical Theory of Electricity and Magnetism*, 1895; and Sir J. Jeans, *Mathematical Theory of Electricity and Magnetism*, 1908, 1941.

Electricity in the Home. Introduced first for lighting, electricity is now widely used also for domestic heating and cooking and for running an ever-increasing number of appliances such as radios, refrigerators, irons, vacuum cleaners, and razors.

Circuits.—Led into the building through a duct, the supply cable goes first to a sealed box containing the Authority's fuse. Thence the supply goes, via a meter, to the consumer's fuse box where it divides to form sev. circuits, each with its own fuse. There will generally be 1 5-amp. fuse for the lighting circuit, 1 30-amp. or 15-amp. fuse for the power circuit feeding 2- or 3-pin sockets on the walls, 1 30-amp. fuse for the cooker circuit, and perhaps others.

Fuses.—Electric current flowing through a wire generates heat. To avoid the risk of too high a current breaking down the insulation of the wiring and perhaps causing fire or shock, a fuse is inserted into each branch of the circuit so that all the current has to pass through a strand of wire of low melting point. If the current starts to exceed the safe level for that branch of the wiring, the fuse wire is heated to melting point and the circuit is thereby broken. Fuses in the consumer's box are easily replaced, the main switch being so arranged that the box cannot be opened until the switch is off. Some plugs are provided with fuses, and many electrical appliances have them

built in to avoid damage through short-circuiting.

Wiring.—The wire itself, usually of copper, is always insulated according to the current it is designed to carry by a rubber or polyvinyl chloride (plastics) sheath and sometimes also a sheath of asbestos and one of lead, to form the cable. This cable is led through the building, usually in steel tubing (conduit) concealed in chases cut in the walls or running under floors, over ceilings, etc., to the various switches and fittings. Switches are designed with a spring connection, so that the circuit is made or broken quickly and completely, avoiding sparking, overheating, and risk of fire; they are covered in to avoid any risk of shock, and any damaged cover should be replaced without delay. In bathrooms, where the human body may be wet and earthed through the plumbing system, electric shock would be especially dangerous, and extra precautions need to be taken; any switches should be either outside the bathroom or fixed in the ceiling and cord-operated. Fittings include the various devices for connecting the lamps, etc., to the cables, and for their support; the most familiar is the 'ceiling rose.' Heavy lamps or shades should not be hung from the cable or flex alone; they should be independently supported by chains or brackets.

Electric heaters.—The heating 'element,' whether in a cooker, a boiling ring, or an electric fire, is usually a long spiral of special wire supported in grooves in a fireclay block. This wire is bright and springy when new, but when heated by the current it blackens and becomes brittle; therefore it should not be poked about to obtain lights for spills, etc. Electric fires are now required by law to be equipped with safety guards.

Other electrical appliances are usually supplied with the makers' instructions for use, which should be carefully followed. Apart from replacing lamps, fuses, etc., it is generally unwise for the amateur to attempt his own repairs; the temptation to be satisfied with something less than thorough safety precautions is great. Apart from the risk of damage to expensive appliances, many fires have been caused in this way. The safest general rule is to consult a competent electrician when things go wrong. For minor faults in household systems, however, see **HOME-MAKING**; see also **ELECTRIC HEATING**; **ELECTRIC LAMPS**; **HEATING**; **LIGHTING**.

Electro-chemistry deals with chemical changes brought about by the expenditure of electrical energy, and with the production of electricity from the energy transformed during a chemical change. In this short article it will be impossible to deal with the theoretical questions of E. in more than brief outline. The methods of preparation of substances by means of electrolysis of solutions at moderate fusion temp. will be considered, and also some of the recent applications of electrical methods to chemical analysis and synthesis. For the refining of metals, electro-plating, electro-deposition, and

high-temp. furnaces, see **METALLURGY**. (For the production of electricity see **CELL**, **VOLTAIC**; **ACCUMULATOR**, etc.) There are 3 main methods by which electrical energy can be made to effect chemical changes.

(1) **By electrolysis of electrolytes.**—Solutions of salts, acids, and bases (e.g. alkalis) conduct electricity, at the same time undergoing decomposition into the metal and the acid radical, hydroxyl, or halogen; the metal being produced at the cathode and the acid radical at the anode. Water is the solvent generally employed, but for organic substances alcohol or benzene, etc., may be used. When hydrochloric acid is electrolysed, we have hydrogen liberated at the cathode and chlorine at the anode. Here the primary products of the action are liberated, i.e. H and Cl. Sometimes, however, these products react in the solution. This is the case with potassium hydroxide (KOH). The primary products are potassium and hydroxyl, but unless special methods of prevention are attempted, the products obtained are hydrogen and oxygen, the liberated potassium reacting on the solution at the cathode to give hydrogen according to the equation $2K + 2H_2O = 2KOH + H_2$, while the hydroxyl decomposes to water and O_2 . The H_2 and O_2 are called secondary products of electrolysis. Grotthuss (1805) evolved the theory that the current first decomposed the molecules of the electrolyte before electrolysis occurred, and this theory was universally accepted until 1887, when the results of Van't Hoff's work on osmotic pressure of solutions were pub. Van't Hoff showed that for dilute solutions the dissolved material is subject to laws similar to those governing the volume and pressure of gases, and as a result of this the theory of Grotthuss lost ground. Arrhenius (1887) advanced the theory of the dissociation of the electrolyte in solution into ions, i.e. atoms or groups of atoms carrying charges of positive and negative electricity. The dissociation is not brought about by the electric current, but the ions exist in the solution irrespective of whether a current flows or not. This theory, together with the discovery of the migration of the ions towards the electrodes, forms the basis of the modern explanations of electrolysis (see **SOLUTIONS**). The laws of Faraday state that the amount of decomposition is proportional to the quantity of electricity passed through the solution. Losses by secondary reactions may reduce this theoretical yield and hence the current efficiency of a cell is expressed in terms of the proportion of the actual yield to the theoretical. Again, when an electrolyte is being decomposed by an electric current, a counter e.m.f. is set up in the decomposition cell, and hence the effective e.m.f. is the difference between the total and the counter e.m.f. In order, therefore, to produce an electrolytic deposit the decomposing current must have a higher e.m.f. than that which is set up in the decomposition cell. Thus $E - e = CR$, where e is the counter

e.m.f. and R is the total resistance. Also

$R = \frac{d}{a} \times \text{specific resistance of the electrolyte}$, where d and a are the distance apart and the area of the electrodes respectively. For economical working the resistance R must be made as low as possible, therefore the electrodes are set as closely as working conditions permit and are of large area. The specific resistance must also be kept low and this is found to diminish with rise of temp. in the solution, and with increase of the strength of the solution (within certain limits).

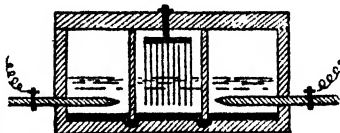
Electrodes and cells.—The negative electrode at which the metal is liberated may be of iron, lead, or copper, while the positive electrode may be carbon, platinum, or platinum-iridium alloy with 15 per cent iridium. Cells are made of various materials dependent on the nature of the solution. Wooden cells coated with pitch are used with acid liquors, or lead tanks in the case of H_2SO_4 , while stoneware is used for alkaline solutions. Some few processes and technical cells will now be described.

Sodium by Castner's process.—The method consists in the electrolysis of fused sodium hydroxide, contained in an iron pot. The products of the electrolysis are oxygen, hydrogen, and sodium. The sodium floats on the surface of the molten caustic and is removed from time to time with a perforated ladle which allows the caustic to drain through. The escape of oxygen and hydrogen in this process represents so much waste electrical energy, and attempts have been made to obtain the metal from the fused chloride. Borchers's apparatus is then used, which consists of a U-tube made in 2 parts, a narrow limb of iron and a broad limb of fireclay. The narrow limb itself is anode, and the sodium produced there flows down a side pipe to a receiver. The chlorine evolved at the anode is led by a pipe to a receiver and used for the manuf. of bleach. The practical difficulties to overcome when using the fused chloride are serious, owing to the higher temp. required and also to the corrosive action of the liberated chlorine.

Brine cells.—The first products of the electrolysis of brine are chlorine at the anode and alkali hydroxide at the cathode. If these products are required they must not be allowed to mix; while if hypochlorite, chlorate, or perchlorate are required, the chlorine and hydroxide must be allowed to react with one another.

Castner's process.—A rectangular tank is used, which is divided into 3 compartments by 2 non-porous partitions dipping into narrow gutters of mercury which cross the bottom of the tank. The 2 outside tanks contain brine, in which are gas carbon anodes, while the centre one contains water and an iron grid, which acts as the cathode. The alkali metal is electrolysed into the mercury in the anode compartments, and is electrolysed out in the cathode compartment. In the cathode compartment the mercury amalgam acts as the anode and hydroxide is formed. The whole cell is slowly rocked,

causing the mercury to flow from one compartment to another, and so the liberated alkali metal is brought into contact with the water. The chlorine is led off by tubes at the top of the anode compartments to bleach chambers. With a 30 per cent solution at $40^\circ C.$, and a current density of



ELECTRO-CHEMISTRY: CASTNER'S PROCESS

1 ampere per sq. cm., the current yield of hydroxide is 90 per cent.

Margreaves-Bird cell.—This consists of a cast-iron box, divided into 3 compartments by 2 asbestos diaphragms made in copper gauze, which forms the cathode. The anode compartment through which brine circulates is the space between the diaphragms, and the anode is a row of gas carbons. No liquid is in the cathode compartment except that which percolates through the diaphragm. Carbon dioxide and steam are blown through the 2 outer compartments and convert the hydroxide formed on the diaphragm to sodium carbonate.

Hypochlorite cells.—Of these the Kellver cell is one of the simplest. It consists of a glazed stoneware vessel divided into compartments by glass plates which fit into grooves on the side of the cell, and around which is wound platinum-iridium wire. These form the cathode on one side of the plate and the anode on the other. The solution enters through holes in the bottom of the cell and the liberated chlorine and hydroxide react to give hypochlorite which flows out at the top of the cell in a cooling vessel. The solution is treated in the same manner several times until the strength is great enough.

Chlorate cells.—These do not differ materially from hypochlorite cells. Earlier cells, however, used a diaphragm to prevent reduction of the hypochlorite from which the chlorate is produced. Reduction can be avoided now by the use of potassium chromate without the use of a diaphragm. The solution flows continuously through the cell, the flow being regulated so that the temp. is about $50^\circ C.$ The percentage of chlorate in the solution is about 3 per cent, and it is crystallised out in cooling vats. Similar cells are used for perchlorates; no description of a special cell has been pub.

Oxygen and hydrogen. Simple electrolysis of acidulated or alkaline water yields oxygen and hydrogen. Cells are used with iron electrodes placed close together. An e.m.f. of 2½ volts is generally used, and the gases are drawn off under hoods or bells and compressed into cylinders. Many other chemical substances are now prepared by electrolytic methods, e.g. persulphates, sodium, peroxide, and organic compounds.

(2) *By electrical discharges through gases.* The fixation of nitrogen by means of electricity has claimed much attention during recent years. When an electric spark is passed through air, nitric oxide is the main product. The reaction is a reversible one, but owing to the researches of Nernst and Haber the conditions for the reaction $N_2 + O_2 \rightleftharpoons 2NO$ are well known. It was found that the best yield of nitric oxide is obtained by using a cool high tension arc and reduced pressure, so that little decomposition of the gas takes place. Electrical plants have been established in Germany, where air is treated at the rate of about 75,000 litres per min., the yield of nitric acid obtained being 57 grams per kilowatt hr. The production of ozone from oxygen is illustrated in the Siemens-Halske ozoniser. In this, air is subjected to the action of a silent electrical discharge (actually pressures of over 4000 volts are employed) after being dried with calcium chloride. The ozonised air is then used for the sterilisation of water by forcing it against a stream of water to be treated, as it drops down a tower.

(3) *By the production of high temperatures (Electrothermal).*—Various electric furnaces have been designed towards this end (see METALLURGY). Carborundum, calcium carbide, graphite (from anthracite), carbon disulphide, and steel (from pig iron) are made by reactions effected by the heat produced in electrothermal reactions. Other applications of electricity include the settling of dust in gases and the drying of peat, by using the principle of electro-osmosis (see OSMOSIS).

Electro-chemical analysis.—Four different methods of quantitative analysis are in use, viz.: (1) potential measurements for determining the concentrations of ions too dilute for gravimetric calculation; (2) conductivity measurements for determining concentrations; (3) titration with a galvanometer in place of an ordinary indicator; and (4) ordinary electroanalysis in which the metal is deposited on a platinum electrode and weighed. The electrolytic method is widely employed, and consists in depositing by electrolysis the substance to be determined on one of the electrodes in a form that can be easily weighed. Metals are deposited in the pure state on the cathode or amalgamated with a mercury cathode. Lead and manganese are deposited as peroxide on the anode. Using a silver anode, chlorine, bromine, and iodine may be obtained and weighed as chloride, bromide, or iodide of silver. See H. J. S. Sand, *Electro-chemistry and Electro-chemical Analysis*, 1939-41.

Electro-chronograph, see CHRONOGRAPH. **Electrocution**, method of inflicting the death penalty by means of a high voltage current passed through the body. First used in U.S.A. in 1888, it is supposed to be less revolting than any other form of capital punishment (q.v.).

Electrode, see ELECTROLYSIS; ANODE; and CATHODE.

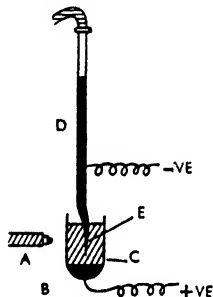
Electrode Boilers, see FURNACES.

Electro-deposition, see ELECTRO-METALLURGY.

Electrolysis. When an electric current is caused to flow through certain liquids they undergo chemical change, their components being chemically separated. Faraday called this phenomenon of decomposition by the electric current 'electrolysis,' and the liquid conductors which show it he called 'electrolytes.' The conduction of the current in an electrolytic solution is accompanied by a migratory movement of the parts of the dissolved substance. These parts are called 'ions,' those moving in the direction of the positive current being the 'cations,' or positive ions, and those in the opposite direction the 'anions,' or negative ions. The solid conductors by which the current passes into the solution are termed 'electrodes.' The electrode toward which the cation moves is named the 'cathode,' that toward which the anion moves the 'anode.' E. was first studied by Nicholson and Carlisle in 1800. They found that platinum wires dipping in water became covered in bubbles when attached to the poles of a primitive electric cell, the Volta Pile. Hydrogen was evolved at the negative pole, the cathode, and oxygen at the positive pole, the anode, the volume of hydrogen being twice that of oxygen. The processes involved are conveniently considered in terms of the electrolysis of copper sulphate, see also ELECTRO-CHEMISTRY. Thus, suppose some copper sulphate is dissolved in water and placed between copper electrodes. The mere act of solution causes the appearance of ions of copper, i.e. atoms which are charged with positive electricity, and sulphate ions carrying negative charge. These ions are moving about freely. If a current of electricity is now passed through the solution, the copper ions move towards the cathode, and on arrival there the charge is neutralised by the negative charge at the cathode. They thus become electrically neutral, and are identical with ordinary copper. The metal therefore deposits on the cathode. Similarly, the sulphate ions move to the anode, where neutralisation of charge takes place. Now the sulphate radicle is incapable of separate existence, so the copper of the anode is immediately attacked, giving rise to copper sulphate, which passes into solution. If the same experiment is done using platinum electrodes, copper is deposited at the cathode as before, but the liberated sulphate radicle immediately attacks the water present to form sulphuric acid and oxygen. Faraday showed that when sev. cells of acidulated water were placed in series and a current passed through, the amount of chemical action was the same in each, even if the electrodes in the various cells were of different metals and of different sizes. He also passed the current through 1 cell, and then through 2 in parallel. The amount of chemical decomposition in the first cell was equal to the sum of that in the other 2. Faraday therefore framed his first law, which states that 'the mass of any substance liberated during electrolysis is proportional to the quantity of electricity which passes.' Thus

an apparatus for the decomposition of water can be used to measure quantity of electricity. Such an apparatus is called a *voltameter*. Faraday then examined the amounts of different metals deposited from their solution by the same current and formed his second law, that *'the masses of different substances liberated by a given quantity of electricity are proportional to the chemical equivalent weights of the substances.'* The amount in grammes of a substance which is deposited by a current of 1 ampere flowing for 1 sec. is called the electro-chemical equivalent of the substance. The ratio of the electro-chemical equivalents of two substances is the same as that of their chemical equivalents.

It has been shown experimentally that Ohm's law is obeyed by electrolytes. The electrolytic cell is placed in the 4th arm of a Wheatstone bridge (q.v.). Owing to



CAPILLARY ELECTROMETER

polarisation a direct current cannot be used. But if an alternating current is used the effects of polarisation are overcome, because the gas deposited on an electrode by the passage of electricity in one direction is immediately removed by its passage in the opposite direction. An ordinary galvanometer cannot be used to detect an alternating current. A telephone is used instead. An alternating current of suitable frequency produces in the telephone a buzzing sound which is a minimum when the current is a minimum. The alternating current is obtained from an oscillator. It is found that for very dilute solutions the conductivity (reciprocal of the resistance) is proportional to the concentration.

Theory of voltaic cell.—The source of energy of a voltaic cell is the chemical action. For example, in a Daniell cell there is a solution of zinc in sulphuric acid and liberation of copper from copper sulphate. Energy is evolved in the first action and absorbed in the second. The difference goes to provide energy for maintaining the current and doing external work. The work done by a cell giving a current i is Eit where E is the e.m.f. and t the time. If we know the electro-chemical equivalents of zinc and copper we can determine the amount of zinc dissolved and the amount of copper

deposited in time, t , by a current, i . A knowledge of chemistry gives us the data for the amount of energy evolved by the solution of this amount of zinc and deposition of this amount of copper. Thus it is possible to calculate E , and values obtained agree closely with those observed. The exact seat of the potential difference was debated by physicists for years. Volta located it at the junction of dissimilar metals. Faraday at the junction of the metal and electrolyte. It has been shown by experiment that there is a potential difference between the metal and electrolyte. One instrument used is the capillary electrometer (see fig.). It consists of a glass tube, D , drawn out to a fine capillary tube at E . This tube, D , is partially filled with mercury and dips into the electrolyte in a vessel, C . In the bottom of the vessel is placed some mercury, B , which is connected to one terminal of a cell. The mercury in D is connected to the other terminal of the cell. Thus an e.m.f. is applied in the surface between the mercury and the electrolyte. This e.m.f. is adjustable. The surface tension of the area of contact of the mercury and solution at E is affected by its electrical state, as e.g. when a current crosses the interface. There is a certain e.m.f. due to the contact of these liquids. As the applied e.m.f. is gradually increased, having the mercury in D at a lower potential than the electrolyte, the surface tension of this layer increases, and the mercury in D must be raised to keep the level of mercury in E the same. This is viewed through a microscope, A . As the applied e.m.f. is increased the level in D must be raised till it reaches a maximum, and then it has to be lowered again. The value of the applied e.m.f. at the turning point of the level of mercury in D is equal and opposite to the contact e.m.f. between mercury and the electrolyte. The result of experiments with this electrometer favours the view that the e.m.f. of a cell is the sum of the contact differences of potential between its electrodes and the acid. Polarisation can be explained on this contact potential theory. If the electrodes are platinum and the electrolyte sulphuric acid, hydrogen forms a film on the cathode, and oxygen a film on the anode. The difference of potential of the film of hydrogen and the acid is greater than that between the acid and oxygen. Thus a current tends to flow in the opposite direction to the direct current. See ELECTRO-CHEMISTRY; ELECTRO-METALLURGY; PHYSICAL CONSTANTS.

Electrolytic Cells, see ELECTRO-CHEMISTRY; ELECTROLYSIS.

Electromagnetic Induction, see INDUCTION, ELECTROMAGNETIC.

Electromagnetic Waves consist of associated variations of electric and magnetic fields. They are called, in order of increasing frequency or decreasing wavelength, radio waves, heat rays, light rays, ultra-violet rays, X-rays, and gamma rays (q.v.). The first relation between electricity and magnetism was estab. by Oersted in 1820. He noticed that when an electric current was made to flow

through a wire a nearby compass needle, initially parallel to the wire, was deflected. Eleven years later Faraday discovered that an electric current could be induced in a circuit by moving a magnet near it such that the magnetic flux through the circuit was changed. Maxwell (1831-79) was convinced that Faraday was right in his belief that the dielectric (q.v.) is the true seat of electric phenomena. When an electric field is set up in a dielectric, the molecular electric dipoles tend to orient themselves along the field, i.e. the dielectric becomes polarised. Thus a change of field is associated with a displacement of electricity within the dielectric. Maxwell considered that this 'displacement current,' as he called it, would have the same magnetic properties as the current in a conductor. He went further and assumed that space was filled with 'incompressible electricity' which could suffer an electric displacement, i.e. that a displacement current could flow even in a vacuum. The displacement current can be shown to be equal to the rate of change of electric displacement (q.v.) and this concept does not demand that a model of space should be constructed in the simple manner used by Maxwell.

The important concept of displacement current opened the way for the formulation of Maxwell's equations which summarise the essential relations between electric and magnetic fields. For a medium of dielectric constant ϵ , and magnetic permeability μ , in which there is no conduction of electricity and no accumulation of electric charge, the equations take the form:

$$\left. \begin{aligned} \epsilon \frac{\partial E_x}{\partial t} - \frac{\partial H_z}{\partial y} - \frac{\partial H_y}{\partial z} \\ \epsilon \frac{\partial E_y}{\partial t} - \frac{\partial H_z}{\partial z} - \frac{\partial H_x}{\partial x} \\ \epsilon \frac{\partial E_z}{\partial t} - \frac{\partial H_y}{\partial x} - \frac{\partial H_x}{\partial y} \end{aligned} \right\} \dots \text{Equ. 1}$$

$$\left. \begin{aligned} -\mu \frac{\partial H_x}{\partial t} - \frac{\partial E_z}{\partial y} - \frac{\partial E_y}{\partial z} \\ -\mu \frac{\partial H_y}{\partial t} - \frac{\partial E_z}{\partial z} - \frac{\partial E_x}{\partial x} \\ -\mu \frac{\partial H_z}{\partial t} - \frac{\partial E_y}{\partial x} - \frac{\partial E_x}{\partial y} \end{aligned} \right\} \dots \text{Equ. 2}$$

$$\frac{\partial}{\partial x} (\epsilon E_x) + \frac{\partial}{\partial y} (\epsilon E_y) + \frac{\partial}{\partial z} (\epsilon E_z) = 0 \dots \text{Equ. 3}$$

$$\frac{\partial}{\partial x} (\mu H_x) + \frac{\partial}{\partial y} (\mu H_y) + \frac{\partial}{\partial z} (\mu H_z) = 0 \dots \text{Equ. 4}$$

FIG. 1

where E_x, E_y, E_z and H_x, H_y, H_z are the components of the electric and magnetic fields along 3 mutually perpendicular directions x, y , and z . In equation 1 the terms $\partial E/\partial t$ represent the displacement current which produces a magnetic field, and if the material carries an 'ordinary' current of density j units of current per unit area the left hand sides must include further terms $4\pi j_x, 4\pi j_y$, and $4\pi j_z$ respectively. Equation 2 expresses Faraday's law of induced electromotive force. Equation 3 is the mathematical equivalent of Gauss's theorem in electrostatics, and for a charge density ρ within the material the right-hand side equals $4\pi\rho$. Equation 4 expresses Gauss's theorem in magnetism, and indicates that free magnetic poles do not exist. The constant c is the ratio of the magnitudes of the electromagnetic and electrostatic units of current.

Maxwell showed in 1862 that a medium with properties expressed by these 4 equations would be capable of transmitting transverse waves with a velocity of $c/\sqrt{\epsilon\mu}$. For a vacuum ϵ and μ are

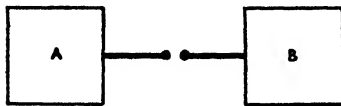


FIG. 2

equal to unity and the velocity is c . Maxwell remarked that the ratio of the units, c , 'agrees so exactly with the velocity of light calculated from the optical experiments of M. Fizeau, that we can scarcely avoid the inference that light consists in the transverse undulations of the same medium, which is the cause of electric and magnetic phenomena.' This inference is now universally accepted although the 'medium' is not now regarded as essential in the unsophisticated sense considered by Maxwell (see *ETHER*). It is sufficient to state that a periodic variation of electric field at a point in space is associated with a corresponding variation of magnetic field at right angles to it, and that this electromagnetic disturbance or wave travels with the same velocity as that of light.

Experiments by Hertz.—About 13 years after Maxwell pub. his theory, Hertz made known the fact that he had produced and detected electro-magnetic waves, and also that their velocity was approximately that of light. It can be shown that the discharge of an electrified system of capacity C through a circuit of self-induction L is oscillatory and of period $2\pi\sqrt{LC}$. The oscillations, however, rapidly die away. It is known that a vibrating tuning fork held near an open pipe will throw the air column into vibration, and elicit a note from the pipe if the length is adjusted so that its period

is the same as that of the fork (see **RESONANCE**). In a similar way an oscillating discharge in a circuit will produce an electric oscillation in another circuit which possesses the same periodic time. Hertz used the same principle to detect E. W. Fig. 2 shows the simple vibrator used by him. It consists of 2 brass plates, A and B, to each of which is attached a stiff wire carrying a brass knob. These are gilt and placed about 2 or 3 millimetres apart, so that when A and B are oppositely electrified a spark passes. Electric oscillation is set up, the spark passing back and forth from A to B. The frequency of oscillation in Hertz's experiment was about 30 million cycles per sec. At each passage of the charge, induced currents appear in neighbouring conductors, and if the periodic time of oscillation in one of these should happen to be the same as that of the vibrator, the oscillations induced in it will become multiplied,

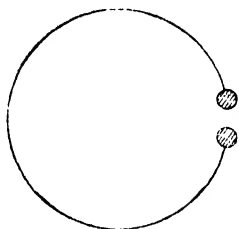


FIG. 3

and may attain considerable intensity. The resonator made by Hertz (Fig. 3) consisted simply of a circle of wire, the ends terminating in brass knobs, whose distance apart could be adjusted. The length of the wire was such that its period was the same as that of the vibrator. When the vibrator is in action the induced current swings backwards and forwards in the circle from one knob to the other, and finally attains such a strength that sparking actually occurs between the knobs. For testing the laws of reflection and refraction of waves Hertz used more delicate apparatus. He concentrated the radiation by use of zinc reflectors bent to the shape of parabolic mirrors. By connecting the knobs of the vibrator to an induction coil continuous sparking takes place. There is then no need for the plates A and B. The resonator was a similar pair of knobs placed at the focus of a parabolic mirror. With this apparatus he proved that E. W. are reflected from the walls of a room. He also had a huge prism made of pitch, and found that the waves were refracted by it. He determined the index of refraction and found it to be 1.69. The index of refraction of pitch for light waves is between 1.5 and 1.6. The discrepancy is due to the fact that the wave length for the E. W. used was very great compared to that of light, and an agreement can hardly be expected.

Hertz placed the receiver in front of a huge sheet of zinc, from which waves from the vibrator were being reflected. By investigating the field in front of the zinc with his resonator he showed that stationary waves were being produced. He was able to find the wave length of the disturbance for a known period of the vibrator. Thus he found the velocity of the E. W. and found that it was approximately that of light. He also demonstrated the polarisation of these waves; in fact they behave in all ways like light waves. All these experiments of Hertz go to support Maxwell's theory in a striking way. Practical application of Hertz's results has been made by Marconi and others in wireless telegraphy (q.v.). See RADIOCOMMUNICATION; RADIO WAVES; PROPAGATION.

Electro-metallurgy, broadly speaking, is the application of electricity to metallurgical processes; hence in its widest sense it is often applied to processes in which electricity is used merely as a source of heat to motivate purely chemical or physical reactions, e.g. the electric arc furnace for steel-making and electric welding. More correctly the term should be limited to electrolytic processes.

Electro-deposition embraces the electrolytic extraction of a metal from its salts, either molten, e.g. aluminium, or in aqueous solution, as in electro-plating and its specialised application electro-forming. In order to understand the principles of electro-deposition, consider the case of silver. When silver nitrate is dissolved in water it ionises into the positively charged silver ion and the negatively charged nitrate ion. If 2 pieces of metal, to act as electrodes, say a spoon connected to the negative terminal of a battery and a piece of sheet silver connected to the positive terminal, are immersed in the solution, the current will begin to flow in at the piece of silver, through the solution and out again at the spoon. The spoon, being the negative electrode, is called the cathode, and the piece of silver, being positive, is the anode. As the current flows the silver ions are attracted to the cathode, pick up their missing electrons, and become silver metal which deposits on the spoon. The nitrate ions migrate to the anode, give up their excess electrons, and then react with the water to form nitric acid and release bubbles of oxygen from it. At the same time some of the silver from the sheet-silver electrode dissolves and keeps the silver-nitrate content of the solution constant. In electro-plating the nature of the plate can be governed quite widely from mat to shiny and from strongly adherent to crumbly by control of the condition of the bath, e.g. composition, acidity, temp., presence of certain 'addition agents,' current density, etc. Some metals which give a good bright, non-tarnishing finish to the basis metal of the article to be plated do not adhere very well to it, and also being porous may allow moisture to permeate through and set up corrosion which eventually causes the plate to strip off. A case in point is chromium plate

on steel. To overcome this difficulty layers of one or more metals which supply the missing properties are deposited first, e.g. copper first on steel for adhesion, then a layer of nickel for corrosion protection, and finally chromium for its non-tarnishing lustre. Alloys may be deposited by electrolysis a solution of the mixed salts of the component metals, e.g. brass can be plated out from a mixed copper and zinc solution. The same principles apply to the electrolysis of molten salts. In the case of bauxite dissolved in cryolite, a very heavy current is required because of the high energy of association binding aluminium and oxygen together. Electroforming is the reproduction of any surface, metallic or otherwise, by electro-deposition methods. An example is the copying of the 'master' gramophone record in order to be able to mould thousands of replicas for sale. To do this the master of wax is coated with a very fine metallic powder to render it conducting. It is then made the cathode in a bath of copper sulphate, a plate of copper being the anode, and a current passed until the copper which plates out on the disk is thick enough. Next the wax is stripped off and the copper negative used to make, by similar plating processes, a hard steel negative in the form of a die. Two such dies, one with the obverse and the other the reverse recording, are then placed in a press where the resinous material of which the final record is made is heated to the plastic state, pressed and cooled, and becomes the positive replica of the original wax recording. In electrotyping the same principle is applied for the formation of a copper printing medium from a wax or plastic original (see further PRINTING).

Electrometer, instrument for the accurate measurement of electric potential (q.v.).

Attracted disk electrometer (Fig. 1) consists of a metal disk, S, which is supported

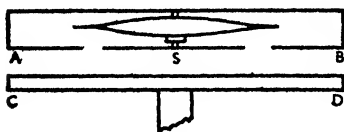


FIG. 1

by 3 fine springs, so that it lies slightly above the plane of a guard ring, AB. The function of this ring is to keep the surface charge density on S constant, and thus avoid errors usually connected with edges of conductors. Another metal disk, CD, is placed on an insulating stand and parallel to S. It can be moved nearer to S by means of a micrometer screw. In using the instrument the guard ring and disk are connected to earth, and are thus at zero potential. The disk CD is connected to the conductor whose potential is required and the disk S is consequently attracted towards CD. The disk CD is moved until the disk S is

in the plane of AB. The distance, d , between S and CD can be read off on the micrometer screw. The force, f , required to bring S into the place of AB is determined, when CD is absent, by placing known weights on S. It can be proved that if V is the potential of CD, $V = \sqrt{\frac{8\pi f}{A}}$ where A is the area of the disk S.

Thus V can be determined.

Quadrant electrometer.—This E. was devised by Lord Kelvin and is extremely sensitive. In the simple form a light aluminium disk (called the needle) is supported in a horizontal position by a metal-coated quartz fibre (Fig. 2). Any

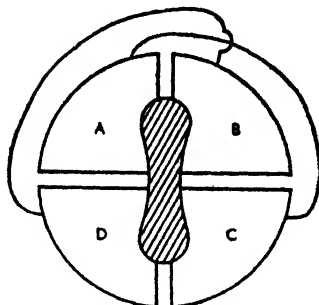


FIG. 2

force tending to displace the needle is opposed by the torsion in this fibre. A shallow metal box divided into 4 quadrants, A, B, C, D, surrounds the needle. Each of the quadrants is supported on an insulating pillar. Opposite quadrants are connected together. When the needle is in equilibrium and the quadrants uncharged, it lies over the junction line between 2 quadrants. The needle is charged to a high potential. It still lies over the junction line as before. Any deflection of the needle is noted by the reflection of light from a small mirror attached to it, which reflects the light on to a scale. The position of the spot of light is observed when the needle is in equilibrium. If one pair of quadrants is put to earth and the other connected to the body whose potential is required, the deflection of the spot of light is proportional to the potential. If the opposite pairs of quadrants are connected to 2 sources of potential, V_1 and V_2 , and if V_0 is that of the needle, which must be great compared to V_1 and V_2 , the deflection of the needle is approximately proportional to $V_0 (V_1 - V_2)$. Thus if the deflection is noted for a known difference of potential, a difference of potential producing any other deflection can be ascertained.

Lindemann electrometer, a small and very sensitive instrument, essentially a modified quadrant E. The suspension is a taut horizontal quartz fibre carrying a

short glass 'needle.' The quadrants are in a vertical plane and enclose the needle.

String electrometer.—Two very thin platinum wires hang together and are joined at their lower ends to a retaining 'spring' of quartz. Parallel to them are placed stout wires, connected to earth. The potential is applied to the platinum wires and they separate, in the same way as the leaves of the gold-leaf electroscope (q.v.). They are observed by a microscope.

See ELECTROSTATICS; ELECTROSCOPE; POTENTIAL, ELECTRIC.

Electromotive Force (e.m.f.). see CURRENT ELECTRICITY—*Electromotive Force and Resistance.*

Electron. the elementary corpuscle of negative electricity. Plücker (1859) showed that when an electric discharge took place in evacuated tubes, rays were given off from the cathode. Sir J. J. Thomson (1897) showed that these cathode rays (q.v.) were composed of fast-moving particles carrying negative charge. By the application of a magnetic field they could be deflected, but could be brought back again under the action of an electric field at right angles to the magnetic field. The ratio of the charge of an E. to its mass (e/m) was calculated from these experiments. The value of e was found by Townsend and C. T. R. Wilson by experiments on the condensation of water on charged nuclei when sudden expansion was allowed to take place (see WILSON CLOUD CHAMBER) and more accurately by Millikan, who balanced the weights of small charged droplets of oil or mercury against the forces exerted upon them by an electric field of known strength (see OIL DROP EXPERIMENT). A more accurate method is obtained from measurements with X-rays (q.v.).

E.s. are produced by a number of physical processes; by high voltage discharges in gases at low pressures; by heating metals or certain oxides to near-incandescence (see THERMIONICS AND THERMIONIC VALVES); by illuminating metal surfaces with ultra-violet or ordinary light (see PHOTOELECTRIC EFFECT); by irradiating substances with X-rays (q.v.); by radioactive disintegrations of nuclei (see BETA PARTICLES); and by the conversion of a gamma-ray (q.v.) near a nucleus into a negative E. and a positive E., i.e. a positron (q.v.).

Fast E.s. are known as beta-particles and have a greater mass than that of an electron at rest (m_0), as given by the relativistic relation $m = m_0/\sqrt{1-v^2/c^2}$, where m is the mass at a velocity v , and c is the velocity of light. E.s. are found in atoms (q.v.) and have definite energies which were taken by Bohr to be associated with definite orbits about the nucleus. Transitions from one energy level to another are accompanied by the emission or absorption of light quanta or X-rays. The rest mass of the electron is $9 \cdot 109 \cdot 10^{-31}$ g., and its charge is $4 \cdot 803 \cdot 10^{-10}$ electrostatic units of charge.

See R. A. Millikan, *Electrons (+ and -)*, *Protons, Photons, Neutrons, and Cosmic Rays*, 1935.

Electron Microscope. When a large wave on the surface of the sea meets one of the piles of a pier it can be observed to divide as it passes the pile, and then to recombine and pass on with its form practically unchanged. On the other hand, ripples of waves of short wave-length are reflected or are broken up into a pattern when they meet such objects, so that whereas it would be impossible to deduce anything about the shapes or positions of the piles by observations of large waves that had passed between them, the ripples carry with them implicit information about the obstructions. This behaviour is typical of other waves besides those on the surface of water, and waves that meet an object do not provide useful information about it unless their wave-lengths are comparable with, or smaller than, the dimensions of the object. Ordinary light consists of waves whose wave-length is about 1 twenty-millionth of an in., and there is thus a natural limit to the size of the smallest objects that can be examined with an ordinary microscope, no matter how well designed and constructed it may be. By using ultra-violet radiation (i.e. radiation of shorter wave-length than that of light of the visible spectrum) somewhat smaller objects can be observed, but the improvement is not great.

During the 3rd decade of the present century it was found that E.s. (and other material particles) possess many of the attributes of a wave motion, although in many respects they behave also as particles. The waves associated with them are peculiar in that their lengths depend upon the masses of the particles and upon their speeds, the wave-length decreasing as the speed increases. It is, moreover, a simple matter in the laboratory to accelerate E.s. to such speeds that their waves are much shorter than those of light. If, therefore, it is possible to cause E.s. to follow curved paths, in the same way as a beam of light is bent or refracted in passing from one medium to another, it should be possible to use E. waves in a microscope in the way light is used in an ordinary microscope, and at the same time avoid the limitations which the wave-length of light imposes. E.s., however, are charged particles, so a beam of moving E.s. can be refracted by an electrostatic or magnetic field, and if the field is of suitable shape and intensity it serves as an E. lens in the same way as a glass lens does with light waves. At the present time magnetic lenses are preferred to electrostatic for most purposes, but either can be used. The usual type of E. microscope works as follows. A beam of E.s. is produced in a cathode ray tube and accelerated to a high speed by the use of a high voltage. The beam passes through a 'lens' which concentrates it upon the specimen, whose thickness must be sufficiently small to permit most of the E.s. to pass through without excessive scattering. The lens is a shield of mild steel surrounding a magnetising coil, and ending in specially shaped pole pieces which thus constitute a short concentrated

magnetic field. The beam of E.s emerging from the specimen passes through a lens that acts as the objective lens of the M. and produces a magnified image, and thence through a projection lens whose function is to form a yet more magnified image on a photographic plate. After development this shows the structure of the object in terms of its E. density. Since collisions with air molecules would interfere with the paths of the E.s the E. M. must be evacuated. This is a disadvantage since it makes the apparatus more elaborate and makes it difficult to use specimens that

playing 'digital' methods and those using 'continuous variable' or 'analogue' methods. E. digital computers perform arithmetical operations on numbers represented by sequences of pulses usually in the scale of 2. Their mechanical ancestor is the abacus (q.v.), still used in the Far East. Modern E. machines work at a pulse repetition rate of up to 4,000,000 pulses per sec. and incorporate 'memory units,' better known as 'stores,' which enable information and instructions to be stored, referred to, and modified at E. speeds. This facility makes it possible



Courtesy Computing Division of Elliott Bros. (London) Ltd.
THE ELLIOTT 402 COMPUTER

are liable to damage during drying (e.g. biological material). The complexity and expensiveness of the apparatus are further disadvantages, but the E. M. is nevertheless a very useful instrument since it provides the means for examining objects far smaller than the smallest of those that can be seen in the best optical microscopes, and magnifications up to about 100,000 are attainable.

See R. W. G. Wyckoff, *Electron Microscopy: Technique and Applications*, 1949; V. E. Cosslett, *Practical Electron Microscopy*, 1951; C. E. Hall, *Introduction to Electron Microscopy*, 1953.

Electron Volt, a unit of energy frequently used in atomic physics. It is the energy acquired by an E. when it moves between 2 points at a potential difference of 1 V. One E. V. is equal to 1.60203×10^{-12} erg. An electromagnetic quantum, e.g. a gamma-ray (q.v.), of 1 MeV. (million eV.) energy has a wavelength of 1.2396×10^{-10} cm. or 0.012395 Angström unit.

Electronic Computation. E. computing machines fall into 2 classes: those em-

ploying 'digital' methods and those using 'continuous variable' or 'analogue' methods. E. digital computers perform arithmetical operations on numbers represented by sequences of pulses usually in the scale of 2. Their mechanical ancestor is the abacus (q.v.), still used in the Far East. Modern E. machines work at a pulse repetition rate of up to 4,000,000 pulses per sec. and incorporate 'memory units,' better known as 'stores,' which enable information and instructions to be stored, referred to, and modified at E. speeds. This facility makes it possible for them to organise the details of their own activity as calculation proceeds. Usually in these machines numbers are equivalent in length to about 10 decimal places, but larger numbers can be handled by refined programming techniques. In some respects they resemble human brains but the popular term 'electronic brain' is a misnomer, since they rely for their intelligence upon the human being who prepares the programme of operating instructions for the job in hand. Analogue computers rely on the measurement of some physical quantity, such as length or voltage, and are used where speed is more important than accuracy. Typical mechanical prototypes are the slide rule (q.v.) and the mechanical differential analyser (q.v.). Most analogue computers rely mainly on the fact that the voltage across a resistance is proportional to the current flowing, while that across a capacitance is proportional to the time-integral of current. Voltages representing variables can thus be added, integrated, and so forth, according to the equation to be solved, and the solution is provided in

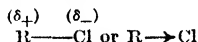
the form of a graph, recorder chart, or cathode-ray tube. Present-day instruments can produce sev. thousand solutions per sec., so that the effect of changing equation parameters is readily and quickly observable. Computers in Brit. offices are growing in number; one such machine calculates the pay-roll for 10,000 employees in about 4 hrs, replacing 37 full-time clerks using ordinary office machinery. See also AUTOMATION.

Electronic Engraving, invention which challenges orthodox methods of engraving plates for printing. It usually works by photo-electric cells and eliminates the acid method. The general scheme is to have 2 frames, either cylindrical or flat, the drawing or photograph to be reproduced being placed on one and the plate to be engraved on the other. A scanning arm actuated by electronic devices travels over the original and causes the blank plate to be engraved with a facsimile, the product being ready for printing. The models in operation include: The *Elgrama* (Elgrama Ltd., Zürich) uses zinc or copper plates for half-tones and colour plates, and plastic for line blocks. Plates up to 16½ in. by 11½ in. can be produced in 13 different screens with from 50 to 200 lines per in.; there are 8 colour shades between black and white. The *Elgrama* is equipped with 2 cylinders, one for the original and one for the blank, and a block roughly 11½ in. by 8½ in. takes about half an hr to produce. The *Klischograph* (Dr-Ing lt. Hell, Kiel, Germany) mounts the original face downwards on to a glass plate with a sheet of thermo-plastic face upwards underneath, the picture being scanned from beneath by a light beam. Photo-electric cells pick up the reflections, which are transmitted to the engraving head. A maximum size plate (8 in. by 6 in.) takes 18 min. to produce. The *Scan-a-Graver* (Fairchild Graphic Equipment Inc., Jamaica, N.Y.) uses 2 cylinders. The console model provides for a maximum size plate, 12 in. by 8 in., and there are available 4 screens, 65-120 line. A smaller model, the *Cadet*, working on the same principle, offers screens of 65 and 85 line only. It will produce a plate 8 in. by 6 in. in about half an hr. A development is called the *Scan-a-Sizer*, its advantage being that it can enlarge or reduce 4 times and handles a plate 16½ in. by 13 in. A fourth machine, the *Luxograph* (Minceel & Co., Paris), was for a time on the market, but information from the makers states that it has been acquired by the Fairchild organisation and incorporated with the *Scan-a-Graver*. The result may be a new and improved design, but of this no details are available.

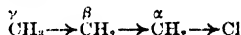
The great advantage of E. E. is the speed with which plates are produced. Mainly for this reason E. E. machines have been installed in newspaper offices, including *The Times*, and they are of special value in country towns situated some distance from the nearest process-engraving works.

Electronic Theory of Organic Chemistry. Prior to 1930, organic chem. was viewed in

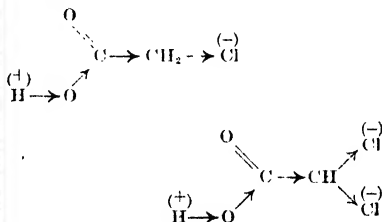
the light of Rutherford's nucleus atom and of the Lewis-Langmuir theory of valency. As the structure of the atom became more completely known, electronic theories of Lapworth, Robinson, and Lowry were put forward to explain the reactions of organic compounds, and these theories have been expanded or modified, notably by Ingold and Dewar. These theories are based on the displacement of electrons in a molecule. In organic chem., bonds of a mainly covalent character are dealt with, and if atoms or groups are not identical, then the nucleus of one of the atoms will exert a stronger influence on the bond electrons than will the other. This indicates a permanent polarisation represented in the dipole moment (q.v.), e.g.



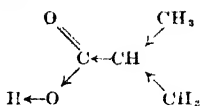
This influence is propagated along the chain in the direction of the arrow although its effect on the β -atom is reduced and is almost negligible on the γ -atom, e.g.



This permanent effect of electron displacement is the *inductive effect*. Hydrogen is chosen as reference for measurement of relative inductive effects, and any atom or group that attracts electrons more strongly than hydrogen has a $-I$ effect (electron-attracting), such as the NO_2 group, halogens and phenyl (C_6H_5) group. If the attraction for electrons is less than that for hydrogen, the atom or group has a $+I$ effect (electron-repelling), such as alkyl groups. The inductive effect explains why dichloroacetic acid is more acidic than the monochloro derivative and why this is more acidic than iso-butyric acid. Chlorine atoms are electron-attracting and the withdrawal of electrons is thus greater in the dichloro than in the monochloro compound. The acidic hydrogen atom thus becomes more positive in dichloroacetic acid and consequently the compound becomes more acidic, since the acidity is due to the hydrogen ion.

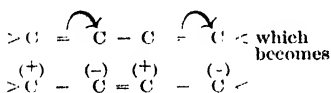


The methyl groups, being electron-repelling, tend to make the H atom of the carboxyl group less positive, so preventing its ionisation to a large extent, with consequent reduction in acidity.



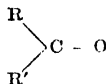
The second method of electron displacement involves the successive and complete transfer of 2 electrons from a double bond to a neighbouring atom, and this *electromeric effect* can be transmitted along a conjugated chain giving rise to activated molecules. The effect is only temporary but is brought about instantaneously and then only at the demand of the attacking reagent.

e.g. $\text{>C} \overset{1}{=}\overset{2}{\text{C}}-\overset{3}{\text{C}}=\overset{4}{\text{C}}$ becomes

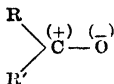


The curved arrows indicate the direction of the electron transfer, and if the system is activated throughout, the electrical charges will be strongest at the ends of the chain. Hence the reaction of such a system as above with, say, HBr, i.e. H^+ and Br^- ions, will give a product in which the H^+ is attracted to carbon atom number 4 and the Br^- to carbon atom 1.

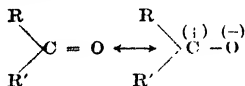
The third type of electron displacement is connected with the theory of *resonance* or *mesomerism*. This theory was developed on chemical grounds since it has been found that no structural formula can explain all the properties of certain compounds. For example, aldehydes and ketones (q.v.) can be represented as



but experimental work has shown the carbonyl group ($\text{>C} = \text{O}$) to possess a certain amount of polar character, i.e.



This has been explained by resonance, and the structure of the carbonyl group which describes all the properties of that group cannot be represented pictorially but must be considered as intermediate between the non-polar and dipolar structures, i.e. a resonance hybrid of these 2 structures, viz.:



These electron displacement effects have helped to explain much in organic chem., e.g. reactions of aldehydes and ketones, aromatic substitution, and the mechanism of many molecular rearrangements.

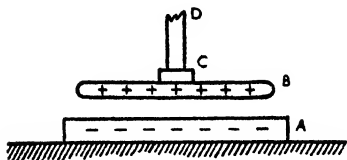
Electronics is a branch of electrical engineering dealing with the theory, design, and application of apparatus based on flow of electrons outside ordinary conductors in which Ohm's law is valid, i.e. in vacuum, gases, vapours, certain crystals, and semi-conductors. The prin. devices are the thermionic valve and its offspring, the cathode-ray tube and electron microscope, the X-ray tube, the photocell, and the transistor (semi-conductor). The main applications are in telecommunications, in measurement technique, rectifiers, analysis, control and regulation, computers, recording, and medical science.

Electroosmosis, see ELECTROPHORESIS.

Electrophoresis, sometimes termed cataphoresis. If solid particles, liquid drops, or gas bubbles are present in a liquid, and are so small that they settle out slowly or not at all, then, when electrodes are introduced into the liquid, a movement of the particles occurs, and they travel towards one or other of the electrodes. The direction and speed of motion depend upon the existence of electric charges at the surfaces of the particles, and hence upon the nature of the particles. The phenomenon is called E., and is used for the separation of particles or large molecules, e.g. proteins, from others that are generally similar. A related phenomenon is that of *electroosmosis*. If electrodes are placed at each end of a tube containing liquid, and the tube has a porous plug of solid material somewhere within it, charging the electrodes causes liquid to flow through the plug towards one or other of the electrodes. On reversing the polarity of the electrodes the flow is reversed. Similarly, if the liquid is forced through the plug by mechanical pressure a difference of electrical potential is set up between electrodes placed in contact with the ends of the plug. This potential difference is called the streaming potential.

Electrophorus, the simplest of influence or electrostatic induction machines. It consists of a disk or 'cake' of resin, or some other material easily excited, A, and a polished metal plate, B, with an insulating handle, CD. The metal plate should be slightly smaller in diameter than the resin disk. The latter is electrified by striking it with dry flannel or fur. The metal plate is then placed upon it. The plate will not touch the disk except at a few points, and there will be almost no conduction of charge from A to B, because resin is an insulator. Between most of the surface of the plate and that of the disk there will be a thin film of air. Thus B will be electrified by induction (q.v.), that is, positive electricity will appear on the face of B near to A, and negative electricity on the face farther away. If the metal plate is now touched with the finger, the negative charge will be con-

ducted away, but the positive charge will be 'held in position' by the charge at A. Thus on removing the plate it will be found to have a positive charge. Another and more satisfactory explanation is in terms of potential. When B is placed upon A it is given a negative potential because of the nearby negative charge of A—other nearby objects are assumed to be earthed or uncharged. On connecting B to earth its potential changes from negative to zero, and to do this it must

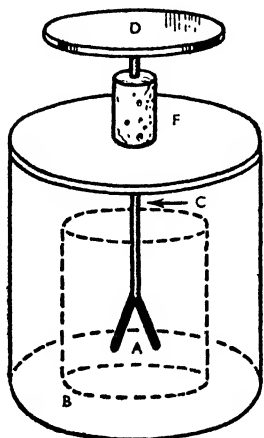


ELECTROPHORUS

lose negative charge. But B was originally uncharged and therefore finally it has a positive charge. B can be charged by this method many times without appreciably altering the charge on A. A is often fitted into a shallow metal vessel, called the sole, which increases the utility of the arrangement. See ELECTROSTATICS; INDUCTION, ELECTROSTATIC; POTENTIAL, ELECTRIC; ELECTROSTATIC MACHINES.

Electro-plating and Electro-refining, see ELECTRO-METALLURGY.

Electroscope, an instrument used for the detection of electric charge or the difference of potential. One of the simplest forms, as used by Cavendish, consists of 2 pith balls on silk threads attached to the

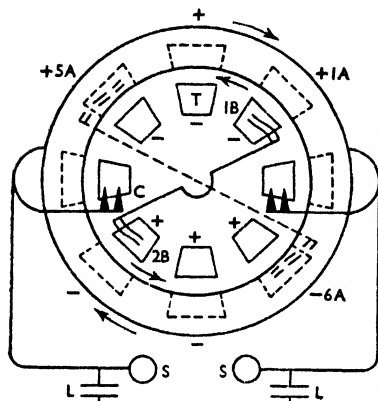


GOLD LEAF ELECTROSCOPE

same point of suspension. They are at first attracted to a charged object, but after touching it and sharing its charges they are repelled and repel each other. A much more sensitive instrument consists of 2 gold or aluminium leaves, A, suspended from a brass rod, C. This rod terminates in a disk, D, after having passed through an insulating plug, F. Thus A, C, and D form one conductor, which is well insulated. The leaves, A, are sometimes surrounded by a cylinder of wire gauze, B. In some instruments this is replaced by strips of foil placed on the glass vessel surrounding the leaves. When the leaves are electrified, they repel each other to an angle which depends on the potential difference between the leaves and the wire gauze. These instruments are suitable for qualitative work, but an electrometer (q.v.) is essential for quantitative measurements. See ELECTROSTATICS; ELECTROMETER; POTENTIAL, ELECTRIC.

Electrostatic Machines produce high voltages, but relatively small currents, by the application of the principle of induction (q.v.) and the phenomenon of point discharge. An *electrophorus* (q.v.) is the simplest machine, allowing any number of charges to be produced from a charged plate without diminution of the charge on the plate. The *Wimshurst machine* consists of 2 vertical parallel disks of varnished glass or ebonite arranged to rotate in opposite directions. In the figure the disks are drawn with different diameters to facilitate the illustration of the action of the machine, but in practice they are usually the same size. A number of strips of tinfoil (T) are attached to the outer faces of the disks. Fixed conductors, terminating in brushes pressing against the disks, ensure that the strip of tinfoil opposite the brushes is in electrical contact with a strip at the opposite end of the diameter on the same disk. Consider a positive charge on a strip 1A of tinfoil on disk A. When it comes opposite the strip 1B on disk B touched by the brushes, it induces a negative charge on that strip and a positive charge on the diametrically opposite strip 2B, with which 1B is in momentary contact. As the disk rotates, the strips 1B and 2B leave the brushes and remain negatively and positively charged respectively. These charges are collected on 2 Leyden jar (q.v.) condensers (L) by means of metal combs (C), which have pointed teeth situated a short distance from the tinfoil strips on the rotating plates. The action of the combs depends on E. induction, which produces an opposite charge on the points and in consequence a high electric field which leads to point discharge. Before the charged strip 1B reaches the collecting combs, it comes opposite the strip 5A (say) which is joined to the diametrically opposite strip 6A, and induction again takes place with similar results, i.e. 5A and 6A leave the brushes with a positive and negative charge respectively. These charges are also collected on the appropriate combs. The 2 Leyden jars

are usually connected to brass knobs (S) a few cms. apart, and voltages up to 50,000 volts can be obtained sufficient to cause spark discharges between the knobs to take place. See VAN DE GRAAF MACHINE.



WIMSHURST MACHINE

Electrostatics. A Gk philosopher, Thales, who lived about 600 BC, discovered that amber, when rubbed, acquired the property of attracting light substances, such as pieces of pith or cork. Towards the end of the 16th cent. Wm Gilbert (q.v.) found that this property was also possessed by many other substances, such as sulphur and glass. All such phenomena are studied under the science of electricity, the name being derived from the Gk word for amber. E. is that part of the study which deals with electricity in equilibrium. Gilbert's work was followed up by Robert Boyle, who added to the list of electrics. In 1729 Stephen Gray discovered the properties of insulators and conductors. If an electrified piece of sulphur is laid on another piece of sulphur it retains its electricity for some time. The same thing occurs if it is suspended by a piece of dry silk thread. If, however, it is rubbed gently with a damp cloth, or with the hand, or touched all over with a piece of metal foil, it loses its charge. The sulphur and dry silk thread are called insulators, whilst the hand, the damp cloth, and the metal foil are conductors. If a metal rod is held in the hand and rubbed with a dry cloth, no electrification apparently takes place, but if the metal rod has an ebonite handle by which it is held, the rod becomes electrified on rubbing. In the first case electricity is produced on the metal, but it is immediately conducted away by the hand. In the second case the ebonite handle, which is an insulator, prevents the electricity escaping. Whilst Gray was pursuing his researches in England,

scientists on the Continent were busy making and perfecting electrical friction machines and condensers, and about this time the Leyden jar (q.v.) was first used. It was during this period also that Charles Dufay discovered that there were two kinds of electrification. This can be estab. as follows: A wire stirrup is suspended by means of a dry silk thread. In the stirrup a rod of glass or ebonite can be suspended after it has been electrified. Electrify one end of an ebonite rod by rubbing it with a piece of dry flannel, and suspend it in the stirrup so that it hangs in a horizontal position. Now electrify another rod of ebonite by rubbing it with flannel and bring it near the electrified end of the suspended rod. The latter is repelled. Now electrify a piece of glass by rubbing it with dry silk, and bring it near the suspended ebonite. The latter is attracted. However, 2 pieces of electrified glass repel each other. These experiments show that there are 2 different kinds of electrification produced on the ebonite and glass. Dufay called the electricity produced on the ebonite 'resinous' or negative (-), and that produced on the glass 'vitreous' or positive (+). If the flannel and silk are very dry it is found that, after rubbing, the former attracts the suspended ebonite rod whilst the latter repels it. This shows that when a piece of ebonite is rubbed with flannel the ebonite becomes negatively electrified whilst the flannel becomes positively electrified. In the case of glass and silk, the glass becomes positively electrified and the silk negatively electrified. These experiments led to the proposition of the 2-fluid theory. All unelectrified bodies were supposed to contain vast equal quantities of vitreous and resinous fluids. When a body was electrified, it was supposed to gain an additional quantity of one fluid, and lose an equal quantity of the other, so that the total amount of fluid did not alter. In later years Benjamin Franklin (1706-90) maintained the existence of one fluid only, which unelectrified bodies possess in a certain normal amount. A positively charged body has more, a negatively charged body less, than this normal amount. Franklin also used a Leyden jar (q.v.) to show that the energy of an electrical condenser is stored in the dielectric (q.v.; see also CAPACITOR). On the basis of these and other experiments, Michael Faraday (1791-1867) and James Clerk Maxwell (1831-79) made important theoretical advances. John Canton (1718-72) was the first to discover the phenomenon of electric induction (q.v.). Charles A. de Coulomb (1736-1806) and Henry Cavendish (1731-1810) investigated independently the law of electric attraction and repulsion, and at the beginning of the 19th cent. Faraday first began to make quantitative measurements.

The discovery of the electron (q.v.) in the last few years of the 19th cent. opened the way for a restatement of explanations of electrostatic phenomena. Faraday had recognised that ordinary atoms were

possessed of equal quantities of positive and negative electricity. The phenomenon of electrolysis had suggested to C. J. Stoney in 1874 that a definite unit of charge could be identified. Helmholtz (1881) and Lodge (1885) saw the importance of this 'smallest known particle of electricity,' which was termed the 'electron' by Stoney in 1891. On this theory a negatively charged body has more electrons than it possesses in its usual neutral state, and a positively charged body has a deficiency of electrons. Insulators do not allow a flow of electrons within their bulk, but conductors do.

Variation of electric force with distance.—It was shown by Franz Aepinus (1724-1802) that the electric force between

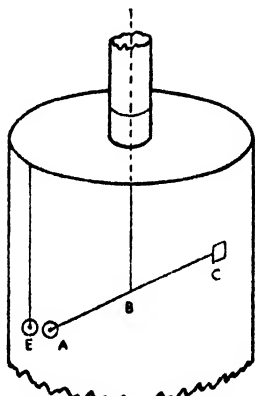


FIG. 1

2 charged bodies diminishes as the distance increases. Coulomb, who made experiments with a torsion balance of his own invention, was the first to publish evidence that the force varies inversely as the square of the distance between the electrified bodies. Coulomb experimented first on the couple required to produce a twist in a wire, and found that the couple is proportional to the angle of twist and that for a given twist the couple varies as the 4th power of the diameter of the wire. Coulomb's balance consists of a small gilded pith ball, A (Fig. 1), placed at one extremity of an arm, ABC, of shellac. This arm is suspended by a very fine silver wire, so that it hangs in a horizontal position. At the top of the silver wire is a graduated screw, so that the wire can be subjected to a known twist. A second ball, E, is suspended by an insulating rod, so that it just touches A. The whole apparatus is placed within a cylindrical glass case. The ball A is then charged, and E brought up to it. When they touch the charge is shared between them and they repel each other. E is fixed, so

the rod ABC is twisted through an angle, α (Fig. 2). The wire is now given a known twist, γ . The rod ABC takes up another position, making a different angle, β , with its original position. Knowing these 2 angles, the distance between the balls can be ascertained and the force between them is known from the twist given to the wire. The final twist in the wire is $(\beta + \gamma)$. The original twist was α . Suppose now γ be made such that the distance, d , between the balls is halved, it will be found that $(\beta + \gamma)$ is 4 times α ; if the distance d is reduced to $\frac{1}{2}d$, $(\beta + \gamma)$ will be 9 times α , and so on. Since the force between the balls varies directly as the twist in the wire, it must vary inversely as the square of the distance between them. Coulomb was thus able to show that this law was approximately if not absolutely true. Cavendish employed another method of testing the inverse square law. It can be shown mathematically that if the inverse square law does hold, then there is no electric field

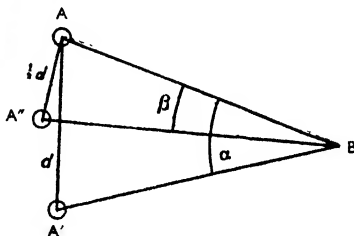


FIG. 2

inside a uniformly charged conducting sphere. If the power is anything except the inverse square then there is an electric field within the sphere and hence an electric charge. Cavendish took a conducting globe and supported it on an insulating stand. He then enclosed the globe in 2 hemispherical conducting shells, which fitted exactly together to form a spherical shell without anywhere touching the globe. He then made connection between the globe and the shell by means of a wire pushed through a hole in the shell, and charged the shell, afterwards removing the wire by means of a silk thread in such a way that the shell was not discharged. He then removed the hemispherical shells and tested the inner globe for a charge. For this test he used 2 pith balls which were suspended side by side. He found that the globe was uncharged, and so demonstrated that there was no electric field inside a charged conducting sphere, and also that the charge of a conductor resides on the surface. Thus he deduced that the inverse square law held.

Electricity as a measurable quantity.—Most of the preceding experiments have been qualitative. But we can speak of giving an insulated conductor a definite amount of electricity just as we can speak

of pouring a definite amount of water into a leakproof vessel. The following ice-pail experiments, due to Faraday, justify the use of the term 'quantity of electricity.' Faraday placed a pewter ice-pail, A (Fig. 3), on an insulating stand, C, and connected the outside to a gold-leaf electroscope, D. A charged metal ball, B, was then lowered into the pail by means of a silk thread. As it approached, the leaves of the electroscope (q.v.) gradually diverged. The divergence attained a maximum when B was well inside the pail. On moving B about inside the pail, it was found that the divergence of the leaves did not alter. Another uncharged ball was lowered into the pail and allowed to share the charge on B. Still the deflection was unaltered. Finally, the balls were allowed to touch the inside of the pail. The deflection of the leaves did not change. On drawing the balls out again they were

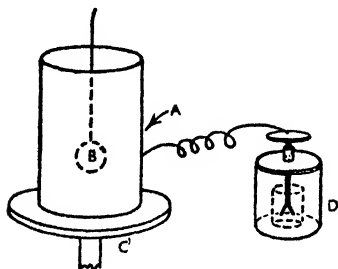


FIG. 3

found to be uncharged. It is thus concluded that the divergence of the leaves depends on something which remains constant however the ball is moved about inside A. This something we shall call a quantity of electricity, and this quantity remains constant, not depending on the position or nature of the charged body. Having accepted the idea of quantity of electricity, we can show that the induced charge (see INDUCTION, ELECTROSTATIC) on the inside of the vessel is equal and opposite to the inducing charge, because when the ball touched the inside of the vessel the quantity on the outside, as indicated by the electroscope, did not change. Again, the charge on the inside of the vessel must be equal and opposite to that on the outside, since, if the ball were taken out before touching the inside, the pail would be uncharged and the leaves would collapse. It should be emphasised that the deflection of the gold-leaf electroscope indicates the difference of potential (q.v.) between the leaves and the case. However, the potential of the leaves is proportional to the charge applied to them and the associated apparatus.

Unit of quantity.—The electrostatic unit (e.s.u.) of quantity of electricity is defined as that quantity which, when

placed on a small particle 1 cm. from a similarly charged particle, repels it with unit force (1 dyne), the particles supposed to be in a vacuum. The practical unit is the coulomb = 3×10^9 e.s.u. It can be proved by means of the torsion balance that the force between 2 charges, e_1, e_2 , is proportional to their product. Thus if f be the force and r the distance between the charges e_1 and e_2 , $f = \frac{e_1 e_2}{K r^2}$ (where K is the specific inductive capacity, q.v., which has unit value for vacuum).

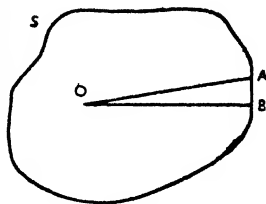


FIG. 4

Electric intensity.—The electric intensity at a point in an electric field is the force in dynes which would be exerted on a small particle charged with unit positive quantity of electricity and placed at the point. It is a vector quantity.

Gauss's theorem.—Suppose we have an imaginary surface, S, surrounding a charge e , at O (Fig. 4). Consider a small element of area a at AB (say). Let N be the electric intensity normal to AB. Then Gauss's theorem states that the sum of all the products aN (or ΣaN , as it is written) is equal to $4\pi e$. If AB is small, the intensity of N over it can be taken as uniform and acts along BO, and is equal to $\frac{e}{OB^2}$. With centre O and radius OB draw a sphere cutting OA in R

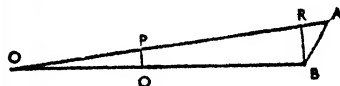


FIG. 5

(Fig. 5). The intensity normal to AB is then $\frac{e}{OB^2} \times \cos \angle RBA$. The product of the area and this intensity is $(\text{area } AB \times \frac{e}{OB^2} \times \cos \angle RBA)$. This is equal to $(\text{area } BR \times \frac{e}{OB^2})$, since area BR is equal to $(\text{area } AB \times \cos \angle RBA)$. With centre O describe any sphere cutting OA in P and OB in Q (Fig. 5). Then area PQ : area RB = $OQ^2 : OB^2$. Therefore area $BR \times \frac{e}{OB^2}$

= area $PQ \times \frac{e}{OP^2}$. This holds for all such elements, AB . Thus $\Sigma \Delta N$ is the same for the sphere as for the imaginary area S . But for the sphere N is constant and equal to $\frac{e}{OP^2}$ and $\Sigma \Delta$ is equal to $4\pi OP^2$. Therefore for any surface S surrounding O the product $\Sigma \Delta N$ is equal to $4\pi e$. The proof can be extended to any number of charges. It can similarly be proved that $\Sigma \Delta N$ for surfaces not surrounding the charge is zero.

Intensity at a point, P , outside a charged conducting sphere.—Through P draw a sphere normal to OP (Fig. 6). The intensity normal to this sphere is everywhere the same and equal to that at P (f say). Thus

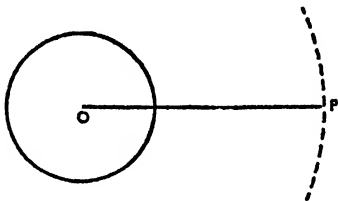


FIG. 6

$\Sigma \Delta N$ is equal to $f \times 4\pi OP^2$, and this is equal to $4\pi e \therefore f = \frac{e}{OP^2}$. If σ is the surface charge density on the sphere, the charge e is $4\pi(OP)^2 \times \sigma$. The intensity at a point very near the sphere is then $\frac{e}{OP^2} = 4\pi\sigma$. This is Coulomb's law. Thus the conducting sphere acts as external points as if its charge were concentrated at the centre. Therefore the potential at a point indefinitely near the sphere, and therefore that of the sphere itself, is $\frac{e}{r}$ (r is the radius).

Capacitance of a conductor.—When a charge e is given to a conductor, initially at zero potential, it acquires a potential V . The ratio e/V is found to be constant for a given conductor in a given relation to other objects and is known as the capacitance of the conductor. From the discussion above, the potential of an isolated conducting sphere carrying a charge e is e/r , where r is the radius. Hence its capacitance e/V is equal to r . The cm. is the e.s.u. of capacitance. The practical unit is the farad which is the capacitance of a conductor the potential of which rises by 1 volt when it receives a charge of 1 coulomb. See CAPACITANCE; CAPACITOR.

Energy of a system.—Suppose a sphere is initially uncharged and a charge, E , is brought up to it in very small amounts, e . Suppose at any time the potential of the sphere were V . The work done in bringing up a charge e would be eV . The potential would be raised to V_1 (say). The work in the next instalment would be eV_1 . Represented graphically we get a

diagram as shown (Fig. 7). The total work done is represented by the sum of the areas of all the vertical strips. If e is made very small, the sum of these strips approximates to the area OPQ , i.e. it is $\frac{1}{2}EV$ (where E is the total charge and V the final potential). The energy of a sphere is therefore $\frac{E^2}{2C}$, i.e. $\frac{1}{2}E^2/C$ or $\frac{1}{2}CV^2$ where C is the capacitance.

Lines and tubes of force.—A line drawn such that its direction at any point is in the direction of the intensity at that point

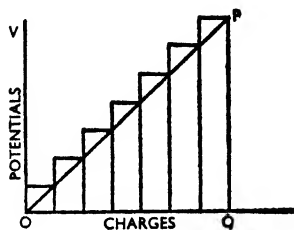


FIG. 7

is called a line of force. If a tubular region of space be imagined as bounded by lines of force it may be called a tube of force or a Faraday tube. The lines of force from a positively charged sphere are shown (Fig. 8). The dotted lines are lines of equipotential. An equipotential line is one which passes through all points of the same potential.

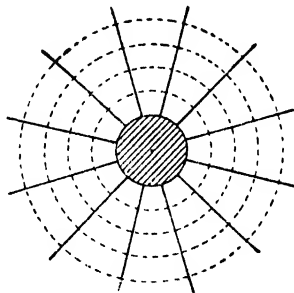


FIG. 8

See also ELECTROMETER; ELECTROPHORUS; ELECTROSCOPE; INDUCTION; ELECTROSTATIC; LEYDEN JAR; POTENTIAL; ELECTRIC; DIELECTRIC; ELECTROSTATIC MACHINES; VAN DE GRAAFF MACHINE. References for further reading are given under ELECTRICITY AND MAGNETISM.

Electro-technical Industries, see CHRONOGRAPH.

Electro-therapy. Static E. as developed by the Wimshurst machine, galvanic E.,

usually obtained from about 40 Leclanché or bichromate cells yielding about 60 volts, and faradic E. as produced by a simple form of induction coil are all used in the interests of medicine. Electricity may be used to produce physiological effects, as when it is applied to the skin, and when 1 electrode is applied to the spine and the other to a muscle. In the first case the sensory surfaces are affected, a pricking and burning sensation being produced and the skin made red, showing increased vascularity. The second action is on the motor apparatus and causes the muscles to contract as the current is made and broken. During the First World War, and subsequently, sinusoidal currents were employed, rapid ones to stimulate relaxed muscles and slow sinusoidal current to restore paralysed muscles. Again, when a broad plate electrode is applied to any part of the body, and the other electrode, consisting of a platinum or steel needle, is inserted into a tumour (say), and a current measured in milliamperes ($\frac{1}{1000}$ of an ampere, this being the unit used in E.) passed, an electrolytic effect will be obtained and the tissue will be decomposed. If the platinum electrode be positive the surrounding tissue will condense and contract round it; if it be negative then the tissue will break up into a loose frothy material. Some nervous and muscular diseases can be diagnosed with the aid of galvanic and faradic currents. Certain diseases of the spinal cord and the cerebro-spinal nerves alter the normal action of the muscles under the electric current. These abnormal effects are referred to as 'reactions of degeneration.' For the treatment of disease the 3 forms of current are used: the static for nervous disorders, e.g. neuralgia; the galvanic for acute neuralgia, atrophy of the muscles, diabetes, joints enlarged and stiffened by rheumatism, tonsillitis, etc.; and the faradic for nervous exhaustion accompanied by insomnia, functional disorders of the generative organs, acute rheumatism, neurasthenia, and other diseases. By passing a suitable current between electrodes applied to appropriate parts of the body, a heating effect is produced, which may act as a sedative to pain, or may stimulate repair of broken-down tissues. Such diathermic treatment is used also for fibrosis of the limbs, empyema, and tuberculous bones.

Electrically produced rays, ultra-violet and X-rays are used separately and in conjunction. (See CANCER: X-RAYS; ULTRA-VIOLET RAYS.) The body itself produces electric currents, and those of the heart are utilised in the diagnosis of cardiac diseases by means of an instrument known as the electrocardiograph. The electric currents produced by the brain are recorded by the electroencephalograph, and this instrument is used in the diagnosis of diseases of the brain, being particularly useful in the diagnosis of epilepsy (q.v.). In conclusion it might be said that belts, rings, and all other contrivances which are advertised as having an electric or magnetic

action only cure in proportion to the faith of the wearer. They have no electrical effect, and if they had, the irregularity of their action and the lack of control of direction of the current would render them very uncertain. The so-called magnetic belts are worse than useless, since it is not known that even the most powerful magnets have any influence on the bodily functions. Electromagnets are occasionally used to extract from tissues small pieces of steel, e.g. broken needle points. See H. Morris, *Medical Electricity for Massage Students*, 4th ed. 1953.

Electrotropism, a very poorly investigated subject dealing with the sensitiveness of plant organs to the action of electric currents. If a plant be grown so that its roots dip into a liquid through which a current is passing, then some of the roots will incline to the anode and some to the cathode, thus showing the acquirement of polarity. See TROPISM.

Electrotyping, see ELEKTRO-METALLURGY; PRINTING.

Electrum had 2 meanings in antiquity: (1) a mixture of gold and silver; (2) amber. In the former sense it occurs in Sophocles's *Antigone*, where mention is made of Indian gold and the 'Electrum of Sardis' as objects of the highest value. This is the native E., but it was also made artificially, and, according to Pliny, E. contained gold and silver in the proportion 4 : 1. It was used for plate and also for money, and coins are still in existence of this metal struck by the kings of Bosphorus, by Syracuse, and by other Gk states.

Electuary (Gk *ekleichen*, to lick out), a term used in medicine for a method of prescribing powdered drugs mixed into a paste with honey or syrup and originally meant to be licked off the spoon. A typical example is compound confection of gualacum, commonly known as Chelsea Pensioner, which is used as a remedy for constipation and rheumatic pains.

Elegit, a writ ordering the seizure of a debtor's land to satisfy a judgment. See EXECUTION.

Elegy (Gk *elepos*) appears to have meant originally a song to flute accompaniment. In anct Gk and Rom. times the term was applied to any poem in elegiac metre, i.e. in alternate hexameters and pentameters. It was not confined to laments, but embraced the warlike poems of Tyrtæus, the love poems of Minnervnus, and the gnomic or reflective verse of Solon and Theognis, all authors of the 7th or 6th cent. BC. It was also used for the poetry of the Alexandrian age, notably that of Callimachus, and 2 famous dirges, Bion's lament for Adonis and Moschus's lament for Bion. The Rom. poets followed Alexandrian fashions and used elegiac metre extensively. Propertius, Tibullus, and Ovid used it for amatory verse, and the last-named also employed it in his *Fasti*, a series of poems on the Rom. calendar, and his letters from exile. Later the use of the form became still more general, and in the 5th cent. AD Rutilius Namatianus wrote in elegiac

verse describing his journey from Rome to France.

In Eng. literature the term E. is applied to a mournful poem or lament, usually for the death of some particular person. Famous examples are Spenser's *Astrophel*, 1586, for Sir Philip Sidney; Milton's *Lycidas*, 1637, for Edward King; Shelley's *Adonais*, 1821, for Keats; and Matthew Arnold's *Thyrsis*, 1867, for A. H. Clough. All these employ the pastoral convention used in Moschus's lament for Bion. Two very famous Eng. E.s which fall outside this pattern are Gray's *Elegy in a Country Churchyard*, 1750, a meditative poem which has a general application, and the personal but also philosophical and religious *In Memoriam*, 1850, which Tennyson wrote in tribute to Arthur Hallam. See C. M. Bowra, *Early Greek Elegists*, 1938; M. Lloyd, *Elegies, Ancient and Modern*, 1903.

Element is any substance which, as far as our knowledge extends, is composed entirely of atoms of identical or almost identical chemical properties (though not necessarily identical in structure—see ISOTOPES). In other words an E. is a substance which up to the present has not been split up into portions possessing different chemical properties. E.s used to be classified as metals and non-metals, and arsenic, boron, bromine, carbon, chlorine, fluorine, hydrogen, iodine, nitrogen, oxygen, phosphorus, selenium, silicon, sulphur, and tellurium; but this list was increased by the discovery of argon, helium, krypton, etc., and in any case, because of the merging of non-metals into metals by stages which make this classification difficult and arbitrary, the periodic system of Mendeleev, as modified in the light of modern knowledge of atomic structure, has been generally adopted (see CHEMISTRY). Most of the E.s, except those of the argon group which are only found free, are usually found as compounds, although carbon, copper, gold, hydrogen, nitrogen, oxygen, silver, and sulphur are found in considerable quantities in their free state. The term E. could formerly be applied in only a tentative manner to any form of matter, because with the advance of science it was always possible that some substance once regarded as an E. might be found to consist of simpler forms, e.g. didymium was found to consist of neodymium and praseodymium. The following is a list of the E.s with their symbols (q.v.), and approximate atomic weights:

Element.	Sym- bol.	Approx. At. Wt.	At. No.
Actinium . . .	Ac	229	89
Aluminium . . .	Al	27	13
Americium . . .	Am	243	95
Antimony . . .	Sb	122	51
(stibium)			
Argon . . .	A	40	18
Arsenic . . .	As	75	33
Astatine . . .	At	210	85
Barium . . .	Ba	137.5	56
Berkelium . . .	Bk	245	97

Element.	Sym- bol.	Approx. At. Wt.	At. No.
Beryllium . . .	Be	9	4
(glucinum)			
Bismuth . . .	Bi	209	83
Boron . . .	B	11	5
Bromine . . .	Br	80	35
Cadmium . . .	Cd	112.5	48
Cæsium . . .	Cs	133	55
Calcium . . .	Ca	40	20
Californium . . .	Cf	246	98
Carbon . . .	C	12	6
Cerium . . .	Ce	140	58
Chlorine . . .	Cl	35.5	17
Chromium . . .	Cr	52	24
Cobalt . . .	Co	59	27
Copper (cuprum) . . .	Cu	63.5	29
Curium . . .	Cm	243	96
Dysprosium . . .	Dy	162.5	66
Erbium . . .	Er	167.5	68
Europium . . .	Eu	152	63
Fluorine . . .	F	19	9
Francium . . .	Fr	223	87
Gadolinium . . .	Gd	157	64
Gallium . . .	Ga	69.5	31
Germanium . . .	Ge	72.5	32
Gold (aurum) . . .	Au	197	79
Hafnium . . .	Hf	178.5	72
Helium . . .	He	4	2
Holmium . . .	Ho	163.5	67
Hydrogen . . .	H	1	1
Illinium . . .	Il	146	61
Indium . . .	In	115	49
Iodine . . .	I	127	53
Iridium . . .	Ir	193	77
Iron (ferrum) . . .	Fe	56	26
Krypton . . .	Kr	83	36
Lanthanum . . .	La	139	57
Lead (plumbum) . . .	Pb	207	82
Lithium . . .	Li	7	3
Lutecium . . .	Lu	175	71
Magnesium . . .	Mg	24.3	12
Manganese . . .	Mn	55	25
Masurium . . .	Ma	98	43
Mercury . . .	Hg	200.6	80
(hydrargyrum)			
Molybdenum . . .	Mo	96	42
Neodymium . . .	Nd	144.5	60
Neon . . .	Ne	20	10
Neptunium . . .	Np	237	93
Nickel . . .	Ni	58.7	28
Niobium . . .	Nb	93	41
(columbium)			
Nitrogen . . .	N	14	7
Osmium . . .	Os	191	76
Oxygen . . .	O	16	8
Palladium . . .	Pd	106.5	46
Phosphorus . . .	P	31	15
Platinum . . .	Pt	195	78
Plutonium . . .	Pu	242	94
Polonium . . .	Po	210	84
Potassium . . .	K	39	19
(kalium)			
Praseodymium . . .	Pr	141	59
Protoactinium . . .	Pa	234	91
Radium . . .	Ra	226	88
Radon (niton) . . .	Rn	222	86
Rhenium . . .	Re	187	75
Rhodium . . .	Rh	103	45
Rubidium . . .	Rb	85.5	37
Ruthenium . . .	Ru	101.5	44
Samarium . . .	Sm	150.5	62
Scandium . . .	Sc	45	21
Selenium . . .	Se	79	34
Silicon . . .	Si	28	14

Element	Sym- bol.	Approx. At. Wt.	At. No.
Silver (argentum)	Ag	108	47
Sodium (natrium)	Na	23	11
Strontium	Sr	87.5	38
Sulphur	S	32	16
Tantalum	Ta	181.5	73
Tellurium	Te	127.5	52
Terbium	Tb	159	65
Thallium	Tl	204.5	81
Thorium	Th	232	90
Thulium	Tm	169.5	69
Tin (stannum)	Sn	118.5	50
Titanium	Ti	48	22
Tungsten	W	184	74
(wolframium)			
Uranium	U	238	92
Vanadium	V	51	23
Xenon	Xe	130	54
Ytterbium	Yb	173.5	70
(neo-ytterbium)			
Yttrium	Y	89	39
Zinc	Zn	65.5	30
Zirconium	Zr	91	40

It should be noted that with the rapid advance of atomic science the possibility of making new E.s artificially has arisen. Thus plutonium, used in the Nagasaki and Bikini bombs, was made by bombarding atoms of uranium with neutrons (q.v.). Sev. other 'artificial' E.s are known (e.g. americium and curium) and their chem. promises to be of great interest and importance. Recently E. number 101, Mendelevium (Mv), has been prepared by bombarding E. 99 with alpha particles.

Elemental Spirits, or Angels of the Elements, were imaginary beings who were supposed to preside over the 4 elements, the spirits of fire being called Salamanders, those of water, Undines, those of air, Sylpha, and those of earth, Gnomes. They were supposed to dwell in their respective elements, and the belief in their existence was a very popular one in the Middle Ages. Paracelsus wrote a treatise on them. See H. Diels, *Elementum*, 1899.

Elementary Education, non-secondary, state education provided for the majority of children up to the compulsory attendance age; obsolete in U.K. since 1944 Education Act. See EDUCATION: INFANT SCHOOLS.

Elemi, oleo-resin obtained from the pitch-tree, a native of Manila. When pure it is pale yellow in colour and resembles honey in consistency. It has an aromatic odour and is soluble in alcohol and ether.

Elenchus (Gk *elegchos*, commonly trans. by the Lat. *argumentum*, *inquisitio*, *confutatio*, and *demonstratio*), a term frequently used in the Aristotelian system of logic to denote argument, replication, refutation, or the subject or nature of dispute, or demonstration. Aristotle himself defines E. as 'a syllogism of contradiction.' In the last 2 books of the *Organon* he classifies and discusses the different kinds of 'sophistical elenchi' or modes of argument used by sophists; e.g. the sophism designated *ignoratio elenchi*, or sinister deviation from the point under

discussion, consists, according to Aristotle, in proving something irrelevant.

Eleocharis, or **Spike-rush**, genus of cosmopolitan plants in the family Cyperaceae. *E. palustris*, *E. pauciflora*, *E. acicularis*, and others grow in marshy places in Britain. *E. tuberosa*, a native of E. Asia, has edible tubers.

Elephant (Lat. *elephantus*; Gk *elephantos*, ivory), a representative of the Proboscidea, an order of mammals. There are 2 existing species of Elephantidae, *Elephas maximus*, Indian E., and *Loxodonta africana*, or African E. A number of extinct forms serve to connect the E., to a limited extent, with other subungulates, such as the conies, but as the absolutely intermediate type has not



Satur photograph
AFRICAN ELEPHANT

been discovered, the origin of the Elephantidae is conjectural. The young Indian E.s are hairy, thus showing some similarity with the mammoth. The most remarkable characteristic of the order, and the one from which they derive their title, is the long, flexible, prehensile proboscis, into which the nose is produced. This trunk, as it is called, is delicately sensitive. It has the nostrils at the extremity, and is used for the purpose of conveying food and water to the mouth. E.s have no canine teeth in either jaw, and their tusks are developed only in the upper jaw; young E.s have a very minute pair of milk-tusks which are shed at an early age; the permanent tusks continue growing throughout life, and so remain open at their bases, which are enclosed in sheaths of the premaxillary bones, extending upwards in the skull as far as the nasal cavity. The tusks of young E.s are tipped with enamel, but this soon wears off and they then consist of ivory alone. The build of the E. is huge and bulky, the head being disproportionately large, the ears large and flapping, the neck very short and thick, and the limbs long and stout. The feet are short and broad, and have 5 toes each, of which the middle one is the largest. E.s are strictly herbivorous, subsisting chiefly upon roots, twigs,

leaves, and young shoots. There is no authentication of the widespread belief that E.s may live for over 100 years. The oldest recorded age is 60 years. The Indian E. is distinguished by its high, bulging forehead and small ears, as well as by its smooth and nearly naked skin. The average height of the adult male does not exceed 9 ft., and that of the female 8 ft., but this is often considerably exceeded, and there is an enormous skeleton in the museum at Calcutta of an E. that lived about 1850-60, which measures 11 ft 3 in. from the shoulders. The height of the Indian E. is almost precisely twice the circumference of its forefoot. Herds of E.s consist of from 30 to 50 individuals, all of which belong to a single family, a female being invariably the leader. They are fond of bathing and rolling in wet mud, and when heated they squirt water over their backs by means of the trunk. The African E. differs chiefly from the Indian species in the enormous size of its ears, which, when in repose, completely cover the animal's shoulders. The forehead is rounded and sloping. Its colour is a somewhat darker grey, and its disposition fiercer, than that of the Asiatic species; also it is more rapid in its movements and has remarkable powers of getting over precipitous ground. Owing to persecution for the sake of its tusks, the African E. has grown much rarer, and is now only found S. of the Sahara, whereas formerly it was spread over the whole of the wooded dists. The white E. is a pure albino, and is sometimes found in Burma and Siam. See G. H. Evans, *Elephants and their diseases*, 1910; D. D. Lyell, *The African elephant and its hunters*, 1924; Rowland Ward, *The elephant in east Central Africa*, 1953.

Elephant Seal, or **Sea-elephant** (*Mirounga*), the largest of the seals, so called because of its size and the proboscis of the male. The latter measures up to 20 ft in length but the female is only 9 to 10 ft in length. It is found in the N. Pacific and the S. ocean; it feeds on squid. It is hunted for its blubber.

Elephant-shrew, name given to sev. insectivorous quadrupeds in the family Macroscelididae. They somewhat resemble the kangaroo-mice in appearance, and use their long hind-legs in similar fashion when they leap over the plains of Africa. The snout is so long that it looks like a proboscis, whence the name. *Macroscelides typicus* is a common specimen, and is called also the jumping-shrew or proboscis-rat.

Elephanta Island (locally called **Chara-puri**), small is. in Bombay harbour, about 5 m. from Bombay, India. It received its name from the Portuguese on account of a colossal statue of an elephant which once stood on the is., but is now in Bombay. It is celebrated for its cave temples, one of which contains a huge 3-faced bust about 18 ft high, representing Siva in his 3-fold character of Creator, Preserver, and Destroyer. See J. Fergusson and J. Burgess, *The Cave Temples of India*, 1880; V. A. Smith, *A History of Fine Art in India and Ceylon*, 1911.

Elephantiasis, chronic condition in

which the legs become thickened and straight up and down like an elephant's. The disease also affects other parts, as E. of the scrotum. It is due to a blocking of the lymphatic glands and channels, combined with irritation of the skin, generally because of external contamination or inflammation. In the tropics blocking of the lymph channels is commonly due to a threadlike worm, known as Filaria, and its eggs. In cold climates the condition is rarely seen, but when it is the blocking is due to various causes. See FILARIASIS.

Elephantine (the *Fezzet-ey-Taher*, or flowery isle, of the Arabs), beautiful is. in the Nile opposite Assuan. It was the prin. place of worship of Khnum or Khnoum, a ram-headed god, who enjoyed great repute as a creator, and was famous for its pottery, a peculiar pink ware with a brownish-pink face.

Elephant's Foot, **Tortoise Plant**, or *Dioscorea elephantipes*, family Dioscoreaceae. It has a peculiar root-stock, with a rough and indented bark, shaped like an elephant's foot. It contains a great quantity of starch and was used freely by the Hottentots for food; hence it is often called Hottentot's bread.

Elephant's Tusk Shell, see DENTALIUM.

El Escorial, see ESCORIAL.

Elets, see YELETS.

Elettaria, see CARDAMOM.

Eleusinia, festival and mysteries, celebrated, originally, only at Eleusis, in honour of Demeter and Persephone (q.v.). They were the most venerable and sacred of all the (4) mysteries. At first initiation was restricted to inhab. of Attica. Later all Greeks were admitted, but barbarians and murderers were excluded. Those who wished to take part in the greater E. were first admitted to the lesser E., held every year in the month of Anthesterion at Agrae on the Ilissus. They might then, as *mystae*, take a part in the great E. the next autumn, but were not actually initiated into the greater mysteries for a year. These were celebrated every year in the month of Boedromion for 9 days, on the 2nd of which the *mystae* were purified. The 3rd was spent in fasting and sacrifice, and on the 4th the *kathartes kathodos*, a procession with a basket of pomegranates and poppy seeds, took place. On the 5th the *mystae* carried torches to the temple of Demeter, where they spent the night, and on the 6th, the most solemn of all, a statue of Iacchus, son of Demeter, garlanded with myrtle and bearing a torch, was carried along the sacred way with shouts and songs. That night the *mystae* were initiated into the last mysteries (*epopteia*), and confirmed the oath of secrecy already taken at the lesser E. On the 7th day the initiated (*epoptae*) returned to Athens. The 8th was an extra day for the benefit of those who arrived late, and on the 9th (*plemnochae*) a libation was poured to the E. and W. with mystical formula. The object of the E. was to excite and strengthen in the initiated faith in life and a system of rewards and punishments after death. See K. Kourouniotes, *Eleusis* (trans.), 1936. See also EUMOLPUS.

Eleusis, tn and deme of Attica, 12 m. distant from Athens. It possessed a magnificent temple of Demeter, and it gave its name to the festival and mysteries of the Eleusinia (q.v.). The tn had been from time immemorial a seat of the worship of Demeter; but after its conquest, which is supposed to have taken place under King Erechtheus, the Eleusinia became a festival common to both cities, though the superintendence of the festival remained with the descendants of Eumolpus, the king of E. Much damage was done to anct monuments, especially Rom. remains, on the site during the Second World War.

Eleuthera, is. of the Bahamas (q.v.). Brit. West Indies, separated from Abaco by the Providence Channel. The soil is fertile and tomatoes, pineapples, oranges, and lemons are cultivated. The main settlement is Governor's Harbour. The is. was colonised by a band of religious refugees from Bermuda, who sailed for the Bahamas in 1647 and settled on E., under the auspices of the Company of Eleutherian Adventurers—a body of Protestant merchants and members of parliament. See *BAHAMAS, History*. Area 164 sq. m.; pop. 6450.

Eleutheropolis, see BEIT GUVRIN.

Elevation, in astronomy, is the height above the horizon of an object on the celestial sphere, measured by the arc of a verticle circle passing through it and the horizon.

Elevators, see CONVEYORS.

Elevators, Grain, see CONVEYORS AND ELEVATORS; HYDRAULIC MACHINERY; LIFTS.

Elf (O.E. *ælf*, *ylf*), a supernatural, diminutive being of early Teutonic lore. E.s were believed to be tricky sprites, much given to interference in human affairs. They stole children and placed changelings in their stead, they visited people in their sleep and gave them nightmares, and sometimes inflicted them with diseases, and with their E.-bolts they struck down human beings and cattle alike. They also E.-locked women's hair, i.e. they tangled it into a matted mess, which it was considered unlucky to undo. E.s were dwarfish and generally black in appearance. See also FAIRIES. See T. Keightley, *Fairy Mythology*, 1828; S. Nilsson, *Primitive Inhabitants of Scandinavia*, 1868; W. Sikes, *British Goblins*, 1880; J. Rhys, *Celtic Folklore*, 1901; C. H. Duncan-Jones, *Book of Fairies*, 1933.

El Fasher, cap. of Dar-Fur, Sudan, and centre of the caravan routes across NE. Africa. Pop. about 15,000.

El Ferrol, see FERROL (DEL CAUDILLO), EL.

Elgar, Sir Edward William (1857-1934), composer, b. Broadheath, Worcs. Practically self-taught, as conductor, executant, and as composer. E. spent his early years at teaching, which he disliked. His music is deeply imbued with the mysticism, not only of Christianity (he was a Rom. Catholic), but also of paganism, as is realised, for instance, in *King Olaf*. E. devoted much of his attention to choral writing, and, besides

Olaf, produced *Caractacus* and other extensive works for solo voices, chorus, and orchestra, the most original and inspired being his setting of Newman's *Dream of Gerontius*, 1890, which was followed by *The Apostles*, 1903, and *The Kingdom*, 1906. *The Dream of Gerontius* is one of the finest works in Brit. choral music, yet was at first received with indifference, but since its eulogism by Richard Strauss it has become widely popular. It is as an instrumental composer, however, that E. is likely to prove most enduring. His early orchestral works include the now classical *Enigma*



Herbert Lambert
SIR EDWARD ELGAR

Variations, 1899, and the striking overtures *Cockaigne*, 1901, and *In the South*, 1903. Later came the 2 symphonies (1908 and 1911), both worthy to rank with the classic symphonies, the splendid *Introduction and Allegro* for strings, 1905, the great violin concerto, dedicated to Kreisler, and the cello concerto, 1919, which Casals ranks among the few masterpieces in this medium. E.'s songs, chamber-music, and smaller works are often poetic, but add nothing to a reputation founded on *Gerontius* and the A7 Symphony. On the whole, the character of his music is deeply psychological and yet broad, noble, generally accessible, and, above all, unmistakably individual. His orchestration especially is superb, and his harmony original and strongly chromatic. The tune 'Land of Hope and Glory,' which occurs in the *Coronation Ode* for Edward VII and one of the *Pomp and Circumstance* military marches, has long been so popular in Great Britain as to be ranked next to 'God Save the Queen' as a national song. His masterly art, as

exemplified most magnificently of all in the symphonic study *Falstaff*, 1913, was well sustained in his *Spirit of England* and *For the Fallen*, both composed in 1916 during the dark days of the First World War. Even if his chamber music produced after that war does not reveal him at his best, he is still, all round, the greatest Eng. composer since Purcell. He was Master of the King's Music in 1924; received the O.M. in 1911, and a baronetcy in 1931. See Basil Maine, *Elgar: his Life and Works*, 2 vols., 1933; W. H. Reed, *Elgar* (Master Musicians), 1939; Diana McVeagh, *Elgar*, 1955; Percy M. Young, *Elgar*, 1955.

El Ghor, see ARABAH.

Elgin, co. of Scotland, see MORAY.

Elgin: 1. Cap. of Morayshire, royal and parl. bor. of Scotland, on the R. Lossie. There are ruins of the fine cathedral, 'lantern of the North,' founded 1224 (burnt 1390, rebuilt later), in the form of a cross, also of the chapter-house and Grey Friars' monastery. The ruined palace of the bishops of Moray is 2 m. N., on Loch Spynie, and 6 m. S.W. is the Cistercian Pluscardine Priory (1230), restored by Lord Bute. There are brewing and woollen industries, saw-mills and sandstone quarries. Pop. 10,535.

2. City in Illinois, U.S.A., on Fox R., 35 m. WNW. of Chicago, in a dairying area. It manufs. watches, electrical appliances, shoes, etc., and is the seat of E. Academy. Pop. 44,200.

Elgin, **Earls of**, Scottish title, borne by the Bruce family. The 1st earl, whose family was by descent connected with Robert I of Scotland, was given his earldom by Charles I in 1633. He was succeeded in 1663 by Robert Bruce, who was created earl of Ailesbury in 1664, and became lord chamberlain in 1687. Thomas Bruce, the 3rd earl (c. 1655-1741), was a courtier of James II, and, for refusing to take the oath of allegiance to William and Mary, was under suspicion. He was imprisoned as a Jacobite conspirator (1690-6), but was allowed to flee to Brussels in 1696. The 9th earl of Kincaidine (1732-71) succeeded as 5th earl of E. in 1747. Thomas Bruce, the 7th earl of E. (1766-1841), sold to the nation, in 1816, the collection of sculptures known as the 'Elgin Marbles' (q.v.). He was a soldier and diplomat, and was Brit. envoy to the sultan of Turkey (1799-1803), where he gathered together his collection.

His son, James Bruce, the 8th earl (1811-63), was also a diplomat. He displayed great ability as governor of Jamaica (1842-6) and of Canada (1847-1854). In 1857 he was sent as an envoy to the Far E., where he concluded the treaty of Tientsin with China (1858), and, on the Chinese refusing to ratify it, he captured Peking (1860). He was appointed viceroy of India in 1862. Victor Alexander Bruce, the 9th earl (1849-1917), was b. near Montreal. He became treasurer of the Household and 1st commissioner of public works during Gladstone's administration (1886), and viceroy of India (1894-1899). He was chairman of the commission of the Scottish Church case (1904),

and was appointed by Campbell-Bannerman secretary for the colonies (1905-8). The 10th earl, Edward James Bruce, was b. in 1881 and succeeded his father in 1917. See *Letters and Journals of the 8th earl*, 1872; and lives by J. G. Bourinot, 1903, G. Wrong, 1905, and J. L. Morison, 1928.

Elgin Marbles, famous collection of ant. Gk sculptures, brought to England (c. 1812) through the agency of the 7th earl of Elgin, after whom they are named, and acquired for the Brit. Museum in 1816 for £35,000. They are portions from the frieze of the Parthenon (designed by Phidias) and other buildings on the Athenian Acropolis. Elgin's act was denounced as 'vandalism,' but if left these treasures would probably have been destroyed by the Turks who were using the Parthenon for target practice. The vessel in which Lord E. shipped 250 ft of the frieze (originally 524 ft in length) was shipwrecked and E. had to pay £74,000 for its recovery.

Elgon, mt 60 m. NE. of Lake Victoria, on the borders of Kenya and Uganda (14,140 ft). An extinct volcano, it can be climbed quite easily. It is well wooded and of great beauty.

El Greco, see THEOTOCOPULI.

El (Heb. 'elevation'), Israelite priest and judge. He was of the family of Ithamar, the younger son of Aaron. He became guardian of the infant Samuel at Shiloh. He was a weak man overruled by his sons, and his leniency to them brought disaster (1 Sam. i-iv).

Elade-Radulescu, Ioan (1802-72), Rumanian author. As a schoolmaster he wrote many of the first Rumanian textbooks. After 1825 he became for a while the leader of the creators of a new Rumanian literature, translating, encouraging younger authors, founding the first periodicals (1829 and 1837) and the Philharmonic Society, 1834, the beginning of the Rumanian theatre. A leader of the revolution, 1848, he was exiled. He did not regain his former influence on his return 7 years later.

Eliakim, see JEHOIACHIN.

Elias, Mount St, see ST ELIAS, MOUNT.

Elie, burgh and quiet seaside resort of Fifeshire, Scotland, on the Firth of Forth. It has 2 golf courses. Pop. 1190.

Eliquis, see ELQI, ST.

Elijah (Gk *Elias*), 'My God is Yahweh,' greatest and most picturesque of the N. prophets, lived under Ahab and Ahaziah (between 874 and 852 bc). His life was chiefly spent in opposing the worship of Baal, which the former king was encouraging (1 Kings xvii-xix and xxi; 2 Kings i and ii; 2 Chron. xxi. 12-15). Like Enoch, he was trans. to heaven instead of dying a natural death, and it was prophesied (Malachi iv. 5) that he would return before the advent of the Messiah. This prophecy Jesus declared fulfilled in John the Baptist. Elias appeared with Moses at the Transfiguration of our Lord, either as one of two who had been assumed without dying, or as representing the Law and the prophets. E. and Enoch are usually identified with the 2 witnesses in Rev. xi. The festival

of E. is on 20 July. In Greece he is regarded as the patron saint of mts, and Rom. Catholic legend describes him as founder of the Carmelite order. See W. Milligan, *Elijah, his Life and Times*, 1887; T. K. Cheyne, *The Hallowing of Criticism: Nine Sermons on Elijah*, 1888; A. Blunt, *The Prophets of Israel*, 1929; H. L. Taylor, *Elijah and Elisha*, 1931.

Elimination, in algebra, is a process of solving systems of equations which consists in getting rid of a quantity or letter which is common to the equations by forming another that does not contain that letter. For example, given

(1) $x^2 + y^2 = 13$
(2) $x + y = 5$ } eliminate y , i.e. deduce an equation involving x only.

Equation (2) is equivalent to
 $y = 5 - x$

∴ Equation (1) is equivalent to

$$x^2 + (5 - x)^2 = 13,$$

$$\text{i.e. } 2x^2 - 10x + 12 = 0,$$

$$\text{or } x^2 - 5x + 6 = 0.$$

$$\therefore (x - 3)(x - 2) = 0,$$

$$\text{hence } x = 2 \text{ or } 3.$$

The corresponding values of y , derived from (2), are obviously 3 and 2.

Eliot, Charles William (1834-1926), Amer. univ. president and educationalist, b. Boston, Massachusetts. He was the son of a mayor of Boston and treasurer of Harvard Univ. As a matter of course the son went to Harvard, from which he graduated in 1853. After a period of study abroad he returned to his country to become prof. of chem. in the Massachusetts Institute of Technology from 1865 to 1869. He was elected president of Harvard Univ. in 1869, and held this great position for 40 years, after which he was president emeritus until his death. In the country at large he was a motive force in improving primary and secondary schools. In religion he became known as one of the greatest spokesmen for the Unitarian faith. He was an active supporter of President Woodrow Wilson, who offered him the embassy to England, which, however, he declined. His mind marched with Wilson's on the great subjects of disarmament and the League of Nations. Among his works are *Four American Leaders*, 1906, *The Road Toward Peace*, 1915, and *A Late Harvest*, 1924.

Eliot, George, pseudonym taken by **Mary Ann or Marian Evans** (1819-80), novelist, b. Arbury Farm, near Nuneaton, Warwickshire, the youngest child of Robert Evans, land-agent to the Newdigate family, by his 2nd wife. She was b. on 22 Nov., and the best authority for her early life is the easily discernible autobiographical portions of her novels. Many of the characteristics of her father are reproduced in Adam Bede and Caleb Garth, her brother Isaac figures as Tom Tulliver, and she herself appears as Maggie Tulliver. Marian Evans was brought up to the strict observances of religion, and, possibly influenced by an aunt who was a Methodist preacher, she inclined to evangelicalism. In these days she was most austere, theatres were to her something almost unholy, and her

favourite reading was Thomas a Kempis and Bunyan. Young and Whiston, *Rasselas*, and *The Lives of the Poets*. When Marian was 22 her father moved from Arbury Park to Coventry, and she went with him. Here began the 2nd phase of her life. She made the acquaintance of Charles Bray (1811-84), the author of *The Philosophy of Necessity* and other works, and of Mrs Bray, whose brother, Charles Hennell (1809-50), had written *An Inquiry concerning the Origin of Christianity*, 1838. In such company (for Bray, as well as his brother-in-law, was



GEORGE ELIOT

A.P.O.

The portrait by Sir Frederick Burton, 1865

a freethinker) Marian Evans began to doubt, and at last to allow her doubts entirely to conquer her. In 1844 when Miss Brabant (afterwards Mrs Charles Hennell) had to resign the task of translating Strauss's *Leben Jesu*, she it was who brought it to a successful conclusion. This was pub. in 1846, but Miss Evans's name did not appear. Robert Evans, who had been greatly distressed by the change in his daughter's religious convictions, d. in the spring of 1849, and then, after a short continental tour with the Brays, she for a while made her home with these devoted friends. In 1851 she was offered the assistant editorship of the *Westminster Review*, and she filled this post for some years, from time to time contributing to its pages articles and elaborate reviews. This work, which necessitated her living in London, occupied most of her day, but she contrived to find time to translate Feuerbach's *Essence of Christianity*, which was pub. in 1854, the only book to appear under her own name.

The 3rd phase of the life of Marian Evans—the 'George Eliot' period—dates from 1853, the beginning of her acquaintance with George Henry Lewes (1817-78), the author of the *Life of Goethe* and the *Biographical History of Philosophy*. In the following year they decided to live together, though they could not be married, because Lewes had a wife living, from whom, however, he was separated. It was not with light hearts that they took this step, but having taken it they regarded the union as being as binding and as legitimate as if it had had the sanction of the law and the Church, and it endured until the death of Lewes 24 years later. Miss Evans continued to contribute to the *Westminster Review*, and she wrote many reviews for the *Leader*, of which paper Lewes was editor. Lewes was a great believer in the genius of Miss Evans, and in 1856 he persuaded her to see if her gifts lay in the direction of fiction. She made an attempt, and Lewes, without divulging the name of the writer, sent it to Blackwood, who at once accepted it for his magazine. This was 'Amos Barton,' and it was followed by 'Mr Gilfil's Love Story' and 'Janet's Repentance.' These stories were collected in 1858 as *Scenes of Clerical Life*, and were received with enthusiasm in literary circles. Dickens was especially appreciative, and he alone among the critics discerned the sex of the author. Encouraged by the success of these short stories, Miss Evans began a full-dress novel, *Adam Bede*, which was finished 13 months later, and pub. on 1 Feb. 1859. The qualities that marked *Scenes of Clerical Life* were present in *Adam Bede*, which evoked a further chorus of praise and placed G. E. in the front rank of contemporary novelists. *Adam Bede* was followed by *The Mill on the Floss*, 1860, which is often regarded as her masterpiece. The earlier part, which is largely a transcript from life of the youth of herself and her brother, is one of the most beautiful things in Eng. fiction; but taken as a whole the novel gives undue prominence to the childish scenes, a fault the author, in reply to a criticism of Bulwer Lytton, regretfully acknowledged.

Silas Marner, a shorter novel which excels in tenderness of fancy, appeared in 1861; and then G. E., accompanied by Lewes, went to Florence to gather material for a projected historical novel of the time of Savonarola. While Thackeray was editor of the *Cornhill Magazine*, Smith, Elder & Co. offered her the hitherto unprecedented sum of £10,000 for the serial and book rights of the new novel, *Romola*. The first instalment was printed in the *Cornhill* in July 1862, the last in Aug. of the following year, the story being written from month to month. The author said that she 'began it a young woman, finished it an old woman,' and certainly the amount of reading that she did in connection with it was enormous. G. E. had said of *Esmond* that there was too much hist. and too little story. Of *Romola* it may be said that not only was the hist. of the period 'got up' for the purpose of writing the novel but that the

information she had acquired most disastrously outweighed the book. *Felix Holt* appeared in 1866, *The Spanish Gypsy*, a poem, 2 years later, and in 1871-2 was pub. *Middlemarch*. In spite of the over-elaboration of plot and language, *Middlemarch* will for ever be valuable as a picture of prov. life in the early 19th cent., and for the many characters that adorn its vast canvas, although it is disfigured by the exaggeration with which Casaubon is portrayed. This book at the time raised the reputation of G. E. to the greatest height. The novel *Daniel Deronda*, 1876, and *Theophrastus Such*, 1878, though successful, did nothing to enhance her fame. Lewes d. in the winter of 1878, and G. E. lost in him husband, friend, and literary adviser, though it may be doubted whether in this last capacity his influence was entirely for good. She bitterly lamented his loss, and shut herself up from all society for some months. In April 1880, to the general surprise, being then in her 61st year, she married John Walter Cross, whom she had known for many years. She d. on 22 Dec. in that year. G. E. is one of the great names in the annals of Victorian fiction. Her pictures of lower middle-class life in the Midlands are unsurpassed, and when, as in her earlier novels, she is not unduly didactic her merits as a painter of character are great. *Adam Bede*, *The Mill on the Floss*, and *Middlemarch* show her at her best, and so good is each of these that critics are undecided which is the greatest. See lives by J. W. Cross (her husband), 1885; O. Browning, 1898; Sir L. Stephen, 1902; E. S. Haldane, 1927; J. L. May, 1930; A. Fremantle, 1933; R. C. Williams, 1936; S. Dewes, 1939; G. Bullett, 1947; and J. Bennett, 1948.

Eliot, Sir John (c. 1590-1632), politician, b. Cornwall, and educ. at Exeter College, Oxford. He entered parliament in 1614 and was knighted 4 years later. He led the opposition to gov. policy in the parliament of 1626, fiercely denouncing Buckingham (his former patron), and was sent to the Tower. He was one of the framers of the Petition of Right, 1628. In 1629 he was again imprisoned in the Tower, charged with conspiracy against the Crown, and d. there. He was regarded by contemporary sympathisers as a martyr to royal tyranny and has since been idealised as a champion of parl. rights.

Eliot, John (1604-90), Eng. missionary to the Indians of Massachusetts, known as 'the Apostle of the Indians.' He attempted to organise the nomadic tribes into a great Christian community, and was minister of Roxbury church, near Boston, U.S.A. E. trans. the Bible into the Indian language. 1661-3, wrote an Indian catechism, 1653, and grammar, 1666; *The Christian Commonwealth*, 1659; and *The Harmony of the Gospels*, 1678. See W. Walker, *Ten New England Leaders*, 1901.

Eliot, Sir Thomas, see ELVOT.
Eliot, Thomas Stearns (1888-), Brit. poet and critic of Amer. origin. b. St Louis, Missouri, the son of Henry Ware E. (1841-1919), whose father, a Unitarian

minister, had come to live in St Louis in 1834. Before that the family had been estab. in Boston since emigrating from England in the 17th cent. E. graduated at Harvard in 1909, spent a year at the Sorbonne, and returned to Harvard to study literature and philosophy. In 1913 he was given an academic appointment



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T. S. ELIOT

there and the following year gained a travelling fellowship which took him to Germany. He also read philosophy at Merton College, Oxford. He married in 1915 and made his home in England. He was for a short time a schoolmaster, then worked in a bank, and in 1917 became assistant editor of the Imagist periodical the *Egoist*. This was followed by his editorship of the *Criterion*, later the *New Criterion*, which for more than 10 years was one of the foremost literary periodicals in London. Since 1925 he has been a director of the publishing firm of Faber and Faber. E. had begun writing poetry at an early age, being influenced strongly by the French Symbolist poets, particularly Jules Laforgue (q.v.). He also owed much to Ezra Pound (q.v.), who encouraged him by his letters and by publishing his work in reviews such as *Poetry*. His first poem to be printed was *The Love Song of J. Alfred Prufrock*, which appeared in *Poetry* in 1915. This and other early pieces were pub. in *Prufrock and Other Observations*, 1917, followed by *Poems*, 1919, and *Ara Vos Prec*, 1919. A collected vol. appeared in 1920. These poems show exact and humorous

observation. They are also a criticism of contemporary urb. life dramatically portrayed through a number of satiric characters. The climax of this phase of apparent disillusionment was reached with the pub. of *The Waste Land* in 1922. This widely celebrated poem, which won the Dial Award of 2000 dollars, applied to modern life the ant. fertility myths studied in Miss Jessie Weston's book, *From Ritual to Romance*, to which E. acknowledged his indebtedness. Great erudition, fused in poetic inspiration, is employed in the juxtaposition of vivid images by which the characteristics of the reality which the poet seeks to express are thrown into relief. The mood in which satire was stronger than sympathy continued in *The Hollow Men*, 1925, and *Sweeney Agonistes*, described as 'Fragments of an Aristophanic Melodrama,' which appeared in the *Criterion* in 1926. Thereafter followed 3 short poems pub. in pamphlet form, *The Journey of the Magi*, 1927, *A Song for Simeon*, 1928, and *Animula*, 1929. E. increasingly devoted himself to the study of good and evil, and the way of escape from the 'waste land' through humility and faith. This found magnificent expression in *Ash Wednesday*, 1930, a poem of profound religious intensity.

At this time poetic drama was enjoying a revival with the work of the Group Theatre, by which *Sweeney Agonistes* was performed. E., however, gained a closer association with the stage during the production of his pageant play *The Rock*, performed at Sadler's Wells in aid of the Forty-Five Churches Fund in the Diocese of London. The choruses, which are fine declamatory poetry, were later printed in the *Collected Poems 1909-1935*, 1936. From this E. proceeded to his first full-length play, *Murder in the Cathedral*, an historical tragedy on the murder of Thomas Becket (q.v.). It was first performed in 1935 in Canterbury and London, and was a marked success. Apart from revivals on the Eng. stage it has since had notable productions in France (1945) and Germany (1946). E.'s next play, *Family Reunion*, was produced in 1939. Its theme is inherited sin and redemption through renunciation. Later plays were *The Cocktail Party*, 1951, and, in lighter vein, *The Confidential Clerk*, 1953. E.'s early poems, which marked a new direction away from 19th-cent. romanticism, have affected the whole course of poetry since their appearance. They were as celebrated for their influence as their achievement. The *Four Quartets*, which were first pub. collectively with that title in 1944, have been described as 'the record of four pilgrimages whose purpose is the rediscovery of and reconciliation with the past.' Each of the 4 poems has for its title the name of the locality with which the poet's meditations are associated: *Burnt Norton*—included in *Collected Poems* in 1936—the name of a deserted house and garden in Gloucestershire; *East Coker*, 1940, a Somerset vil. where E.'s forefathers once lived; *The Dry Salvages*, 1941, a cape of the Amer. coast; *Little Gidding*, 1942, a vil. in Huntingdon.

shire where Nicholas Ferrar (q.v.) once set up a religious community.

In criticism E., himself a critic of dogmatic clarity, is at the head of one trend of thought distinguished by the name classical, being concerned with establishing objective standards. His critical writings, which within their range have attempted a complete revaluation of poetry, are contained in *The Sacred Wood*, 1920, *Homage to John Dryden*, 1924, *For Lancelot Andrews*, 1928, *Dante*, 1929, *Tradition and Experiment in Present Day Poetry*, 1929, *Elizabethan Essays*, 1934, *Essays Ancient and Modern*, 1936, and *What is a Classic?*, 1945. In 1932 E. returned to the U.S.A. to take up the appointment of Charles Eliot Norton Professorship of Poetry at Harvard, 1932-3. A course of lectures delivered at the univ. of Virginia in 1933 was pub. the following year with the title *After Strange Gods, A Primer of Modern Heresy*. His Henriette Hertz lecture on Milton was pub. in 1947. As a high churchman, his *Idea of a Christian Society*, 1939, is a notable plea for a Christian community founded on a national Church. His sociological writings also include *Notes towards the Definition of Culture*, 1948. E. became a naturalised Brit. subject in 1927, and was awarded the O.M. in 1948. He was given honorary doctorates by Harvard, Yale, Princeton, Cambridge, Edinburgh, Bristol, and Leeds. In recognition of his remarkable pioneering work in modern poetry he was awarded the Nobel Prize for Literature, 1948. In 1957 he married his second wife, Valerie Fletcher. See studies by H. R. Williamson, 1932; F. O. Matthiessen, 1935; E. M. Stephenson, 1944; H. Gardner, 1949; M. C. Bradbrook, 1950; and E. Drew, 1952; also selected criticisms, ed. by B. Rajan, 1947; *T. S. Eliot: a Symposium*, 1948; and bibliography by D. Gallup, 1952.

Eliott, George Augustus, see HEATHFIELD, BARON.

Elis, modern **Eles**, in ancient Greece, an important region of W. Peloponnesus, containing the Olympian valley and watered by the Alpheus and Peneus. It lay between Achaia and Messenia, stretching from Araxus and the R. Larissus (N.) to the R. Neda (S.), and bounded on the W. and E. by the Ionian Sea and Arcadian Mts. It was later incorporated in the Rom. prov. of Achaia. The modern Palaeopolis occupies the site of the town of E. Since 1899 a dept. of Greece, with Pyrgos as the cap. Pop. 188,300.

Elizabethville, tn, cap. of Katanga Prov., Belgian Congo, Africa, founded in 1910, 946 m. from Bulawayo, and 1619 m. from Beira. It is a modern tn on regular air routes, both international and continental African. The Star of the Congo Mine is 8 m. away. The smelters of the Union Minière du Haut-Katanga, railway sidings, and native compounds, etc., are in the suburb of Lumbumbashi. Malaria has been considerably reduced here and in other townships of the Belgian Congo, and the sanitary services of E. are highly organised. Pop. (white) 10,558.

Elisavetgrad, see KIROVOGRAD.

Elisha (Gk **Eliseus**), 'God has saved,' son of Shaphat and successor of Elijah, lived during the reigns of Ahab, Ahaziah, Jehoram, Jehu, Jehoahaz, and Jehoash (between 874 and 783 BC), exercising his ministry for nearly 60 years. E. shows a mild and beneficent temperament compared with the fire and austerity of Elijah, whose faithful attendant he was. This comparison is fully brought out by a study of their miracles. See 2 Kings ii-ix. E.'s festival is on 14 June. See also A. W. F. Blunt, *The Prophets of Israel*, 1929; H. L. Taylor, *Elijah and Elisha*, 1931.

Elista, see STEPNOY.

Elixir, from the Arabic *al-iksir* and ultimately from the Gk *zêion* (a drying powder), is primarily an alchemical term for a supposed agent capable of transforming base metals into gold or silver and of prolonging human life indefinitely. It is therefore approximately equivalent to the philosopher's stone. There were 2 main E.s, viz. the Great Red E. and the White E. The latter turned mercury, etc., into silver, while the former turned silver or any other metal into gold. (See ALCHEMY.) The term E. is also applied to a drug of syrupy consistency intended to be slowly swallowed to lubricate the throat in cases of cough and irritation. Another meaning of E. is a medicated flavoured syrup.

Elizavograd, see KIROVOGRAD.

Elizabeth (c. 1437-92), queen of England, daughter of Sir Richard Woodville, 1st earl Rivers (q.v.). She married first Sir John Grey, who was killed at St Albans, 1461. She married Edward IV secretly in 1464 and was crowned queen in 1465. Her elder son by Edward became Edward V (q.v.) and her daughter Elizabeth married Henry VII. Her influence was popularly supposed to have encouraged the laxity and indulgence of Edward's court; it is certain that the extravagant favours she claimed on behalf of her Woodville and Grey connections made her many powerful enemies. Disgraced by Richard III, she later retired to Bermondsey Abbey. Queens' College, Cambridge, was re-founded by her.

Elizabeth I (1533-1603), queen of England, daughter of Henry VIII and Anne Boleyn, b. Greenwich. After Anne's execution Henry's marriage to her was declared invalid, and E.'s early years were spent in semi-obscure and disgrace, though Catherine Parr treated her with great kindness. Later E. was involved in a disreputable, though probably innocent, love-affair with Catherine's 4th husband, Seymour, the lord high admiral, resulting in Seymour's execution. She was well educ. in the New Learning, Ascham, her tutor, speaking highly of her abilities. As she grew older she became increasingly vain and capricious, but the intrigues and dangers of her first 25 years had sharpened her already keen intellect, teaching her, in the last resort, to subordinate emotion to expediency and to act, when really necessary, with decision, ruthlessness, and cunning.

During Mary I's reign, though she had supported her half-sister's claim to the throne against that of Lady Jane Grey, E. soon fell under suspicion. She was accused of complicity in Wyatt's rebellion, and imprisoned. E. was probably not fundamentally religious in temperament: she disliked Protestant excesses and in a more settled age might well have conformed to orthodox Catholicism. But the events of her father's and half-brother's reigns had given the most powerful classes in the country—the nobility, the squirearchy, and the merchants—a vested interest in opposing the restoration of the Catholic Church at least in its capacity as a land-owning corporation; while the Marian persecutions had linked Catholicism with Spain in the popular mind, especially in influential London, so that Protestantism had come to imply patriotism. During Mary's reign E. avoided giving any definite declaration of her own religious position; but circumstances at her accession were such that an early settlement on Protestant lines was virtually inevitable if the Tudor monarchy was to survive.

When E. became queen in 1558 England was divided, bankrupt, and discredited by military defeat. In Mary Stuart there was a strong Catholic rival for the throne. E. emphasised her Englishness; chose a body of trusted advisers ably led by Cecil, and by 1559 felt sure enough of her position at home and abroad to impose (acting through Parliament) a moderate religious settlement intended to satisfy Catholics and Protestants. The Book of Common Prayer and the Thirty-Nine Articles are abiding monuments of the religious hist. of this reign. From the start the settlement satisfied neither extreme. E. was unusual in her age in refusing to persecute on religious grounds alone, declaring she would not 'make windows into men's souls.' But the N. rebellion of 1569 and the pub. of the Papal Bull in England in 1570 forced her to yield increasingly to her advisers' opinion that every Catholic was a potential traitor and should be treated accordingly. Equally, non-conforming Protestants were a challenge to crown authority, though efforts to suppress them had no lasting success.

E.'s foreign policy was aimed at keeping her throne secure and promoting England's greatness. The first of these aims explains why she kept her prisoner, Mary Stuart, alive for so long. While she lived Mary Stuart, though a Catholic, constituted a barrier between E. and the other more dangerous claimant to her throne, Philip of Spain. But after 1586 a head-on collision with Spain was inevitable anyway, and Mary Stuart's position as the prin. Catholic pretender to the crown, coupled with her increasing dependence on Sp. help, meant that her potential danger outweighed her usefulness. Mary's execution quickly followed.

E.'s struggle with Spain forced her into moves which show her diplomatic adroitness and unemotional detachment admirably. She had ignored appeals for

help from continental Protestants when such help would have brought England no material benefit. But to counter Sp. influence she reluctantly sent help to the rebellious Protestant Netherlands, while always disapproving of subjects who rebelled against their sovereign. She entered into 2 series of prolonged negotiations with a view to marrying a Fr. Catholic prince—it is doubtful if she ever intended these to be finalised—firstly to prevent the possibility of a Franco-Sp. alliance against her, and, on the second occasion, to prevent France profiting from the Sp. decline in Flanders to the detriment of Eng. influence there. She staved off a formal war with Spain as long as possible, while encouraging men like Drake to conduct expeditions which were really acts of blatant piracy against Sp. ships and colonies. When war came E. proved an indomitable leader, giving much-needed inspiration and confidence at the time of the Sp. Armada (q.v.).

The parl. hist. of E.'s reign is important for the precedents it created which were to be remembered under subsequent monarchs lacking E.'s capability and popularity. Attempts were made by the Commons to regulate the succession and amend the religious settlement; but these were rapidly scotched by the imprisonment of the ring-leaders and the full weight of E.'s personal displeasure. She took care to flatter at the right time, and to comply when compliance did not really compromise her, as during the last and most turbulent of her parliaments, 1601. She remained financially independent of parliament, even at the cost of over-economy in the sphere of external defence.

Economic progress was considerable during her reign, owing much to E.'s encouragement. Trading and buccaneering encouraged expansion across the seas. Only one of E.'s ventures does not fit the general pattern of successes: her Irish policy. Though she managed to impose some semblance of royal authority over Ireland a good deal more successfully than her predecessors, it was done with great cruelty; while the religious settlement was enforced in such a way that it drove the Irish, whose Catholicism had till then been notoriously lax, into the arms of Rome. Another memorable aspect of E.'s reign was the flowering of the arts, which also owed a good deal to court inspiration. It was the age of Marlowe, Jonson, and Shakespeare.

At her death E. left a country principally and convincingly Protestant; victorious in its chief foreign war; economically buoyant and aggressively self-confident. E. *d.* as she had lived, a very lonely woman, saddened by the treachery of the favourite of her old age, Essex (q.v.). She had outlived her chief adviser, Cecil, her arch-enemy, Philip of Spain, and the one man she had probably once genuinely hoped to marry, Leicester (q.v.). Her achievements were considerable. Yet the basis of her success lay in her own personality, and that she could not pass to her successor. Her address to her last parliament contains the

key to her greatness as a queen: 'This I count the chief glory of my crown, that I have reigned with your loves . . .'. See lives by M. Creighton, 1899, and J. E. Neale, 1934. See also E. Bekker, *Elizabeth and Leicester*, 1890; W. H. Frere, *The English Church in the Reigns of Elizabeth and James*, 1904; A. O. Meyer, *England and the Catholic Church under Queen Elizabeth*, 1916; A. F. Scott Pearson, *Thomas Cartwright and English Puritanism*, 1925; L. Strachey, *Elizabeth and Essex*, 1928; M. V. Ronan, *The Reformation in Ireland under Elizabeth*, 1930; J. E. Black, *The Reign of Elizabeth 1558-1603*, 1936; A. L. Rowse, *The England of Elizabeth*, 1950, and *The Expansion of Elizabethan England*, 1956; J. E. Neale, *Elizabeth and Her Parliaments*, 1953; and C. Read, *Mr Secretary Cecil and Queen Elizabeth*, 1955.

Elizabeth II (Elizabeth Alexandra Mary) (1926-), queen of the U.K. and Northern Ireland and of her realms beyond the seas, b. 12 Bruton Street, London, W.1 on 21 April, 1st child of the duke and duchess of York (subsequently George VI and Queen Elizabeth). She was educ. at home, and was present at her parents' coronation in 1937. In 1940, when she was 14, she broadcast to the children of the Empire; during her father's visit to Italy in 1944 E. was appointed one of the counsellors of state. She entered the A.T.S. at her own request, and was granted a commission, Mar. 1945. E. carried out an increasing number of public engagements, and in 1947, with her parents and sister, visited South Africa, where she celebrated her 21st birthday. From there she broadcast her moving promise, dedicating herself to the service of the Empire.

In July 1947 her engagement was announced to her cousin, Lt. Philip Mountbatten, R.N., formerly Prince Philip of Greece and Denmark, and the marriage took place at Westminster Abbey on 20 Nov. 1947, the bridegroom having been created duke of Edinburgh (q.v.) the previous day. There are 2 children of the marriage: Prince Charles Philip Arthur George (b. 1948), now heir apparent to the throne, and Princess Anne Elizabeth Alice Louise (b. 1950). In May 1948 E. and her husband paid an official visit to Paris; in 1951 they toured Canada (also visiting the U.S.A.). In Jan. 1952 they left London by air on the first stage of a proposed Commonwealth tour, but in Kenya news reached them of George VI's death, and E. returned to England at once, being proclaimed queen on 8 Feb. Her coronation took place on 2 June 1953, and was followed by state visits to Scotland, Wales, and Northern Ireland. In Nov. 1953 E. and the duke of Edinburgh left England on a Commonwealth tour which included visits to Australia, New Zealand (from where E. broadcast her Christmas message to her people), Fiji, Uganda, Malta, and Gibraltar, returning to England in May 1954. Subsequently a crowded programme of public engagements has included state visits to Norway, 1955, Sweden, 1956,

Portugal, France, and Denmark, 1957. The Queen visited the U.S.A. and Canada in the autumn of 1957.



Portrait by Dorothy Wilding, London

H.M. QUEEN ELIZABETH II

In 1957 the Queen's Christmas broadcast was televised for the first time (previously such talks had only been broadcast on sound radio).

Elizabeth (1596-1662), queen of Bohemia, wife of Frederick V, Elector Palatine, and daughter of James I (q.v.) of Great Britain and Anne of Denmark, b. Falkland Castle, Fife-shire. From 1603 till her marriage in 1613 she was brought up in England. In 1619 Frederick was chosen to fill the throne of Bohemia, and from that time onwards E.'s life was dogged by misfortune. The king was routed by the Catholic League and the royal family endured dire poverty in Holland. She had 13 children, among whom were Charles Louis, restored to the electorate in 1648, and Sophia, who afterwards became the mother of George I of England. See R. S. Rait (ed.), *Five Stuart Princesses*, 1902.

Elizabeth, St. of Hungary (1207-31), daughter of Andrew II, king of Hungary, b. Pressburg. She married at a very early age Louis IV, landgrave of Thuringia. He was converted by the celebrated miracle of the changing of the bundle of bread, carried by E. for the poor, into red roses, on his commanding her to display the contents. Louis d. in 1227, and E. thereafter lived as a Franciscan tertiary at Marburg, where she d. Four years later she was canonised by Gregory IX. Her feast is on 19 Nov. See C. F. R. de

Montalembert, *L'Histoire de Sainte Elisabeth de Hongrie*, 1836.

Elizabeth (Elisabeth Philippine Marie Hélène of France) (1764-94), Fr. princess known as 'Madame Elizabeth,' sister of Louis XVI, b. Versailles, guillotined on 10 May 1794.

Elizabeth (Pauline Elizabeth Ottilie Louise) (1843-1916), known under the pseudonym of Carmen Sylva in the literary world, b. Neuwed, Germany, daughter of Prince Hermann of Wied and Princess Maria of Nassau. Married Prince Charles of Rumania in 1869. In 1881 Rumania was declared a kingdom, and the same year E. was crowned queen. The following year she became a member of the Academy of Sciences of Bucharest, and in 1890 she visited England. She pub. rev. vols. of romances, poetry, etc., chiefly written in German, some of which have been trans. into Eng., e.g. *A Royal Story Book*, 1911, *From Memory's Shrine*, 1911, *Sparks from the Anvil; or Thoughts of a Queen*, 1913. She did valuable social work in organising the Rumanian Red Cross, homes for the blind, etc. Queen-dowager, 1914.

Elizabeth, cap. of Union co., New Jersey, U.S.A., 5 m. from Newark, on Newark Bay and Arthur Kill (bridged to Staten Is.). There are factories producing chemicals and electrical machinery; the Singer Sewing Machine Co. have works here, and there are shipbuilding yards, iron foundries, and railway machine shops. E. also manufs. radio, aircraft, and automobile parts, printing presses and types, and paper containers. Settled in 1664 as 'Elizabethtown,' the place has many historical buildings. Princeton Univ. was opened here in 1747. Pop. 112,800.

Elizabeth, new industrial tn of S. Australia, 17 m. N. of Adelaide, opened in 1955. Pop. (1956) 5,000, to be increased to 25,000 by 1960 (by then E. will be the largest country tn in the state).

Elizabeth Angela Marguerite (1900-), queen of Great Britain, wife of George VI of England; youngest daughter of the 14th earl of Strathmore and Kinghorne, b. St Paul's Waldenbury, Herts. She married, 26 April 1923, Prince Albert Frederick, duke of York, subsequently George VI. They had 2 daughters: Elizabeth Alexandra Mary (now Queen Elizabeth II), b. 21 April 1926; and Margaret Rose, b. 21 Aug. 1930. She became queen when Prince Albert succeeded to the throne as George VI on 11 Dec. 1936; was crowned with him in May 1937; and went with the king on a tour of Canada and the U.S.A. in June 1939, the visit being an unqualified success. She broadcast to women of the Empire, 11 April 1943. In 1947 she accompanied the king on a tour of South Africa. After George VI's death on 6 Feb. 1952 she assumed the title of Queen Elizabeth, the Queen Mother. Since her husband's death she has carried out numerous public engagements, notably a visit with Princess Margaret to Rhodesia in 1953. Her sympathy and interest in her people have made her widely loved.

Elizabeth City, cap. of Pasquotank co., North Carolina, U.S.A., on the Pasquotank R., 40 m. from Norfolk, Virginia. It has a fine deep harbour, cotton mills, and a shipyard. The first General Assembly of Virginia met here in 1695. Pop. 12,685.

Elizabeth of York (1465-1503), queen of England, daughter of Edward IV and Elizabeth Woodville, b. Westminster. Sev. marriages were contemplated for her, and Richard III is said to have considered marrying her. In 1486 she married Henry VII, so uniting the Yorkist and Lancastrian lines. She was the mother of Henry VIII and of Margaret, who married James IV of Scotland.

Elizabeth Petrovna (1709-62), empress of Russia, daughter of Peter the Great. She came to the throne in 1741, having overthrown, with the help of the Guards, the infant emperor Ivan VI. She was of an easy-going nature, but serious in matters of gov., and tried to continue the policies of her father. She abolished the death penalty in Russia and was one of the founders of Moscow Univ. The great event of her later years was the Seven Years War.

Elizabeth Tunnel, 60 m. N. of Los Angeles, California, U.S.A., penetrates the Coast Range Mts and is 5 m. long.

Elizabethan Architecture, see ENGLISH ARCHITECTURE.

Elizabethan Standard Weights, see METROLOGY.

Elizabethton, city, co. seat of Carter co., NE Tennessee, U.S.A., making artificial silk and wood products. Pop. 10,575.

Elizabethgrad, see KIROVOGRAD.

Elizavetpol', see KIROVABAD.

El Kantara, tn of Egypt, on the Suez Canal. In the First World War it was the scene of a victory over the Turkish advance guard in 1915. Pop. 25,000.

El Khargeh, or The Great Oasis, large and fruitful valley in the Libyan desert, the most S. of the Egyptian oases. From 80 to 100 m. long and 10 m. broad.

Elk, or Moose (*Alces alces*), the largest living species of deer. It is known in the Old World as the E., but in America as the moose, the American 'E.' or wapiti having less resemblance to the European broad-horned deer than to the red deer. The E. is distributed over the forested regions to the N. of Europe and Asiatic Russia, and it is now everywhere protected by laws, and carefully preserved. It is easily tamed and has frequently been trained to draw sleighs. The antlers, found in the male alone, have their basal portion, which is in the form of a short cylinder, in the same plane as the forehead. The base expands into a huge, broad 'palm,' at the edge of which are short branches. The height at the shoulders is about 6 ft. In the breeding season the males fight with great fury, inflicting such wounds with their horns that the combats frequently result in death.

Elk, Irish, *Cervus megaloceros*, extinct Pleistocene species of deer closely allied to the fallow-deer of the present day, the bones of which are found in Irish bogs and also in certain parts of Great Britain and the Continent. It stood 6 ft in height,

and is characterised by the enormous size of its antlers, which sometimes had a spread of close on 11 ft. Extinct after the coming of man to Europe.

Elk-Hound, small Norwegian dog which much resembles the Eskimo dog (q.v.), but is considerably smaller in size. Its coat is thick, with a full under-coat, and the tail is bushy. The colour is grey, with a darker shade on the back.

Elk Island Park, Alberta, Canada, 30 m. E. of Edmonton (q.v.), the largest fenced animal preserve in Canada. The park was originally reserved in 1906 as a sanctuary for elk, moose, and mule deer in the region. In 1907 it formed a habitat for part of the buffalo herd purchased that year by the gov. of Canada. There is a recreational centre at Astotin Lake.

Elkhart, city in Indiana, U.S.A., on the St Joseph R. in agric. area 15 m. E. of South Bend. It manufs. musical instruments, electrical appliances, and brass, sheet metal, rubber, and paper products. Pop. 35,600.

Ell, see METROLOGY.

Ellä (d. 588), son of Iffa and grandfather of Oswald. He became 1st king of the Deirans, 559.

Ellagic Acid, or **Gallogene** (C₁₂H₆O₆), yellow, odourless powder of agreeable taste only soluble in alkalis. Medicinally, it is used as an astringent in cases of tuberculosis and inflammation of the bowels, becoming active only on reaching the alkaline fluids of the intestines.

Elland, tn in the West Riding of Yorks, England, 3½ m. from Huddersfield, with manufs. of woollens and fireclay goods, and iron and dye works. E. gives it name to an urb. dist., comprising E. Greetland, and Stainland. Stainland has manufs. of worsteds, cotton, and paper. Pop. 19,200.

Ellenborough, Edward Law, 1st Baron (1750-1818), educ. at Charterhouse and Cambridge. In 1771 he became a pupil of the special pleader, George Wood (afterwards a baron of the Exchequer), and 4 years later began practising on his own account with great success. Called to the Bar in 1780, he soon had a large practice. His first great chance came in 1788 when he was retained as leading counsel for the defence of Warren Hastings. His admirable conduct of this case made him famous, and long before it had reached its close he was engaged in many of the most important trials of his day. In 1802 he succeeded Kenyon as lord chief justice, and was raised to the dignity of Baron E. See J. C. Campbell, *Lives of the Chief Justices of England*, 1857 (vol. III).

Ellen's Isle, small is. of Perthshire, Scotland, situated in Loch Katrine. It is celebrated in romance, and immortalised by Sir Walter Scott, who made it the haunt of the Lady of the Lake.

Ellerman, Sir John Reeves (1862-1933), shipowner, financier, and newspaper proprietor, son of John Harman E., of Hull, a native of Hamburg. He early joined the board of Frederick Leyland's company, the first unit of what eventually

developed into the Ellerman group. This group, registered as the London, Liverpool and Ocean Shipping Co., included under the one management the Paypayanni, City, Hall, Westcott, Laurence, and other lines; and in 1913 acquired the share cap. of Bucknall's Steamship Lines, the name of which was changed in 1914 to Ellerman and Bucknall Steamship Company. He was also chairman of Ellerman's Wilson Line. He left a fortune of £30,000,000. Baronet in 1905, Companion of Honour in 1921.

Ellesmere, Francis Leveson-Gower Egerton, 1st Earl of (1800-57), politician and writer, the 2nd son of the 1st duke of Sutherland. On inheriting the estates of the Egertons, dukes of Bridgewater, he took the name of Egerton (1833). In 1846 he was made earl of Ellesmere and viscount Brackley. From 1828 to 1830 he was Irish Secretary, and secretary for war in 1830. Amongst his writings are a trans. of *Faust*, 1823, *Mediterranean Sketches*, 1843, and *History of the War of the Sicilian Vespers*, 1850.

Ellesmere: 1. Urb. dist. in Shropshire, 16 m. NNW. of Shrewsbury. Pop. 2237.

2. Is. of the Arctic regions, Canada, W. of Smith Sound, and opposite NW. Greenland. It is almost entirely ice and snow-covered wastes, with mts rising in some places to 9000 ft. T-3 and other ice is, possibly break off from the ice shelf. See *Arctic*, vol. viii, No. 1, 1955.

Ellesmere Port, urb. dist. and seaport of Cheshire, England, on the Mersey, 6½ m. N. of Chester at the junction of Ellesmere Canal and the Manchester Ship Canal. It is a depot for iron ore and pig iron, with large docks and warehouses, and is regarded as one of the largest oil and petroleum centres in the U.K. Pop. 35,000 (1954).

Ellet, Charles (1810-62), Amer. engineer, b. Penn's Manor, Bucks co., Pennsylvania. The first wire suspension bridge of the U.S.A., at Fairmount, Philadelphia, was his work, and he constructed most of the prin. iron and steel bridges in the U.S.A. He is chiefly remembered as the inventor of naval rams, and in the Amer. Civil war equipped 9 Mississippi R. steamboats as rams, defeating a fleet of Confederate rams. He met his death during a naval engagement.

Ellie Islands, see GILBERT AND ELLICE.

Ellicott, Charles John (1819-1905), prelate, b. Whitwell, near Stamford, where his father was rector. In 1861 he was made dean of Exeter, and 2 years later bishop of Gloucester and Bristol. His episcopate lasted 42 years, and he threw himself vigorously into diocesan work. In 1857 E. was one of the 5 clergymen who pub. a revision of the gospel of St John, followed by revisions of the Romans and Corinthians and other epistles.

Ellil, see ENLIL.

Elliot, Jean, or **Jane** (1727-1805), poetess, b. Minto House in Teviotdale, daughter of Sir Gilbert Elliot, baronet, lord justice clerk of Scotland. She is remembered as the writer of the beautiful 'Flowers of the Forest,' a poetic lament for Flodden, but is not known to have

written any other verse. The poem, composed as the result of a bet with her brother, was at first pub. anonymously as an old ballad.

Elliot-Murray-Kynynmound, Gilbert John, see MINTO, 4th EARL OF.

Elliotson, John (1791-1868), physician, b. Southwark, London. He studied medicine at Edinburgh and Cambridge, and in 1834 became physician to Univ. College Hospital. He practised hypnotism and mesmerism, and in 1838 was compelled to resign his offices on this account. He edited a magazine, *The Zoist*, devoted to the subject, and founded a mesmeric hospital in 1849. E. was one of the first Brit. physicians to advocate the use of the stethoscope. Among his pub. are: *Lectures on Diseases of the Heart*, 1830, *Human Physiology*, 1840, *Surgical Operations in the Mesmeric State without Pain*, 1843. Thackeray dedicated his *Pendennis* to E., who was also a friend of Dickens.

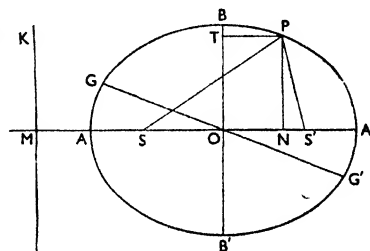
Elliott, Ebenezer (1781-1849), poet, the 'corn-law rhymor,' b. Masborough, near Rotherham, Yorks. He was educ. at various schools, and in 1797 entered his father's iron foundry. He had a successful career at Sheffield as a bar-iron merchant, and on his retirement in 1841 settled at Great Houghton. At the age of 17 he began writing poems, and pub. *The Vernal Walk*, in imitation of Thomson, in 1801. He is chiefly remembered, however, for his *Corn-Law Rhymes*, 1831, which are vigorous, simple, and full of vivid description. They are inspired by a fierce hatred of injustice, and by their sincerity and earnestness are saved from the common fate of political poetry. See his *Life, Poetry, and Letters*, ed. J. Watkins, 1850; memoir by J. Searle, 1850; and W. Odum, *Two Sheffield Poets*, 1929.

Elliott, May Gertrude (Lady Forbes-Robertson) (1874-), actress, b. at Rockland, Maine, U.S.A., sister of Maxine E. She made her first appearance on the stage at New York with E. S. Willard in *The Middleman*, and was first seen on the London stage at Daly's Theatre in 1895 as Sylvia in *The Two Gentlemen of Verona*. She married Sir Johnston Forbes-Robertson in 1900, and played many leading parts with him. Her most successful rôles were Desdemona; Ophelia; the 'slavey' in *The Passing of the Third Floor Back*; Little Britain in *Mice and Men*; and Maudie in *The Light that Failed*. Her later parts included Sarah Gilman in *Sarah of Soho*, 1922; and Maria in *Twelfth Night*, 1927.

Ellipse. In general language an E. is a regular oval. In geometry it may be defined in a number of different ways: (1) The section of a cone by any plane less inclined to the base of the cone than is the side of the cone. (See GEOMETRY) (2) *Higher Plane Geometry*. (2) An oblique section of a right cylinder or the oblique projection of a circle. An E. is the orbit of a particle moving under the influence of a central force, which varies inversely as the square of the distance of the particle. This law is the gravitational law of force.

and an E. represents the orbit of a planet, if the individual planet and the sun are considered alone (the other planets exert attractions and disturb the orbit).

The foci of an E. are the points *S* and *S'* (see diagram) such that the sum of the distances *SP* and *S'P* of any point on the E. from the foci is the same whatever the position of *P*. The straight line *AA'* passing through the foci is the *major axis*, and the line *BB'*, perpendicular to *AA'* at its middle point, is the *minor axis*. If *AA' = 2a* and *BB' = 2b*, $b^2 = a^2(1 - e^2)$,



where *e* is the eccentricity. Also $SP + S'P = 2a$. If *AOA'* and *BOB'* be taken as the axes, the co-ordinates of the point *P* (*ON* and *OT*) are connected by the equation:

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$$

(where *ON = x* and *OT = y*).

The *diameter* is any straight line through the centre, terminated by the E., such as *GOG'*. The *directrix* is the line *MK*, such that the distance of *P* from the focus *S* bears a constant ratio less than unity to the distance of *P* from *MK*.

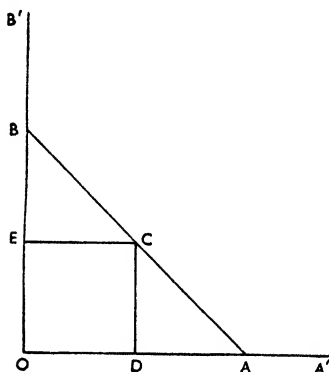
Ellipsoid, a surface generated by a variable ellipse which always moves parallel to itself, and has its vertices on 2 ellipses, the planes of which are perpendicular to each other and also to the plane of the moving ellipse, and have one common axis. From this definition the equation of an E., $x^2/a^2 + y^2/b^2 + z^2/c^2 = 1$, is easily deduced, *a*, *b*, and *c* being the semi-axes. If $b = c$ the equation becomes $x^2/a^2 + (y^2 + z^2)/b^2 = 1$, and this represents an oblate spheroid if *a* is less than *b*, and a prolate spheroid if *a* is greater than *b*. If $a = b = c$ the surface becomes a sphere, $x^2 + y^2 + z^2 = a^2$. The E. is very largely used in the mathematical theories of elasticity, heat, and light, e.g. the strain E., E. of expansion, or the wave surface in a doubly refracting substance.

Elliptic Compass. The trammel or E. C. is the simplest and most widely used instrument for drawing ellipses. It depends on the fact that if a straight line, *AH* (see fig., p. 738), of fixed length moves with its extremities on 2 fixed straight perpendicular lines, *OA'* and *OB'*, then any point, *C*, on the line, either between *A* and

B or on the line AB produced in either direction, will describe an ellipse.

This is easily proved as follows. Taking OA and OB as axes of x and y , let the co-ordinates of C be x, y , so that $CE = x$ and $CD = y$; then, since $CE/CB = \sin B$ and $CD/CA = \sin A = \cos B$, it follows that $x^2/a^2 + y^2/b^2 = \sin^2 B + \cos^2 B = 1$, and hence the locus of C is the ellipse $x^2/a^2 + y^2/b^2 = 1$, where $a = CB$, $b = CA$.

The point C can be taken anywhere on the line and different forms of ellipses can be described. If C is the middle point of AB the curve becomes a circle whose equation is $x^2 + y^2 = a^2$.



Elliptic Polarisation. Elliptically polarised light, when examined with a Nicol prism, will give an illumination which will vary as the Nicol is rotated. It is thus distinguished from ordinary light, but not from a mixture of ordinary and plane polarised light. It may be distinguished by first passing the light through a quarter wave plate of mica with its axis parallel or perpendicular to the plane of maximum polarisation; for elliptically polarised light thus becomes plane polarised, and may be extinguished on rotating the Nicol prism. See POLARISATION OF LIGHT.

Ellis, Alexander John (1814-90), Eng. phonetician, mathematician, and musician. His original name was Sharpe, but he assumed the surname Ellis (1825). He was associated with Sir J. Pitman, founding the system of printing known as 'phonotypy'. His works include *Phonetics*, 1844, *The Essentials of Phonetics*, 1848, *Early English Pronunciation*, 1869-1889, *Pronunciation for Singers*, 1877, and *The History of Musical Pitch*, 1880. He also wrote papers and books on mathematics and philosophy and produced phonetic texts of standard works, and was editor of *The Phonetic Friend*, 1849, and *The Spelling Reformer*, 1849-50.

Ellis, George (1753-1815), Brit. writer, b. West Indies. He attained notoriety in 1778 with the pub. of *Poetical Tales*, by Sir Gregory Gander. He was one of the

contributors to the *Rolliad*, and in later years, with Canning, founded the *Anti-Jacobin*. In 1790 he pub. *Specimens of the Early English Poets*, and 15 years later *Specimens of Early English Romances in Metre*.

Ellis, Sir Henry (1777-1869), antiquary, with Canning, founded the Bodleian, Oxford, and the Brit. Museum (1800), chief librarian of the Brit. Museum (1827-56). His works include an ed. of Brand's *Popular Antiquities*, 1813, of Dugdale's *Monasticon* (with others), 1817-33, *Introduction to Domesday Book*, 1816, *Original Letters Illustrative of English History* (3 series), 1832-46, *Elgin Marbles of the Classic Ages* and *The Townley Gallery of Sculpture*, 1847. E. was director of the Society of Antiquaries for many years.

Ellis, Henry Havelock (1859-1939), psychologist, b. Croydon. At the age of 16 he made a voyage to Australia for his health and remained there 4 years. In 1879 he returned to England and studied medicine at St Thomas's Hospital. In 1891 he married Edith Lees, and he had also a lifelong attachment to Olive Schreiner, the novelist (q.v.). Between 1897 and 1910 he pub. 6 vols. of *Studies in the Psychology of Sex*, and a 7th in 1928. Others of his works on the same subject are *Mun and Woman*, 1891, *The Erotic Rights of Women*, 1918, and *Little Essays of Love and Virtue*, 1922. He also wrote 3 vols. of essays on art, *Impressions and Comments*, 1914-24, and ed. the Mermel series of Eng. dramatists. His autobiography, *My Life*, appeared posthumously. See study by H. Peterson, 1928.

Ellis, Robinson (1834-1913), philologist and classical scholar, educ. at Guernsey, Rugby, and Oxford. He pub. numerous critical works on Catullus and trans. *Catulli Veronensis Liber*, 1867, 1878, *Fragments of Catullus*, 1871, and *Commentary on Catullus*, 1876. Other works are Ovid's *Ibis*, 1881, *New Fragments of Juvenal*, 1901, *Appendix Vergiliana*, 1907, *The Annalist Licinianus*, 1908, *The Amores of Ovid*, 1912, and various articles in many journals, and classical reviews.

Ellis, William (1794-1872), missionary, sent by the London Missionary Society to the S. Pacific Islands (1816-25). From 1831 to 1844 he was foreign secretary to the London Missionary Society. His visits to Madagascar resulted in *History of Madagascar*, 1838, *Three Visits to Madagascar*, 1858, *Madagascar Revisited*, 1867, *The Martyr Church*, 1870. Other works were *A Tour through Onohyhee*, 1826, and *Polynesian Researches*, 1829. See life by J. E. Ellis, 1873.

Ellis Island, small is. in New York harbour, 1 m. from Manhattan Is., formerly used as an immigrant station and as a magazine.

Elliston, Robert William (1774-1831), actor and manager, first appearing (1791) as Tressel in *Richard III* at Bath. In 1796 he came to the Haymarket, London, and was manager there (1803). E. was considered one of the finest actors of his day, especially in comedy, and was praised by Lamb and Leigh Hunt. He

was lessee of Drury Lane Theatre for many years, and he ran sev. theatres in London and the provs. at the same time. See *lives* by W. Oxberry, 1826, and G. Raymond, 1857.

Ellon, burgh of Aberdeenshire, Scotland, 16 m. N. of Aberdeen, on the R. Ythan. Once the cap. of Buchan, the vill. belonged to Kinloss Abbey. Pop. 1500.

Ellora, the Caves of, in Hyderabad State, India, 19 m. from Aurangabad. The E. group of cave temples comprises 12 Buddhist, 17 Brahman, and 5 Jain works. They are mentioned by an Arab geographer of the 15th cent. as a celebrated place of pilgrimage. The Buddhist caves date from AD 350-750. The Brahman caves were probably constructed in the 7th and 8th cents. AD. There are sculptures of the slaughter of the buffalo demon, Siva and Parvati playing chess, 3 skeleton demon gods, Bhairava with a necklace of skulls, 3 riv. goddesses, etc. The great Kailasa temple, carved out of black volcanic rock, is perhaps the finest Hindu monument of ant. India. The 5 Jain caves date from the 8th to the 13th cents.

Ellsworth, Lincoln (1880-1951), Amer. explorer and pioneer of polar flying, b. Chicago, worked first as an engineer in North America (including Alaska). He served in the U.S. Army Air Corps during the First World War. He joined a geographical expedition to Peru in 1924. The following year he accompanied, and his father financed, Amundsen's first polar flight from Spitsbergen to lat. 87° 44' in 2 Dornier-Wal flying boats, one of which was abandoned after a failure to take off after landing on a lead in the pack ice. In 1926 E. accompanied Amundsen and Umberto Nobile in the airship *Norge* during a successful flight from Spitsbergen, over the North Pole, to Alaska in 71 hrs. He assisted Sir Hubert Wilkins in planning the arctic voyage of the submarine *Nautilus* in 1931, and the same summer accompanied the airship *Graf Zeppelin* on her arctic flight from Germany, over Zemlya Frantsa-Iosifa and back by Severnaya Zemlya and Novaya Zemlya. After 2 unsuccessful attempts, in 1933-4 and 1934-5, he made the first trans-antarctic flight from Dundee Is. (North Graham Land) to the Bay of Whales (Ross Sea). He pub. *First flight across the polar sea*, 1926, and *Beyond horizons*, 1938. See the *Polar Record*, vol. vi, No. 43, pp. 419-20.

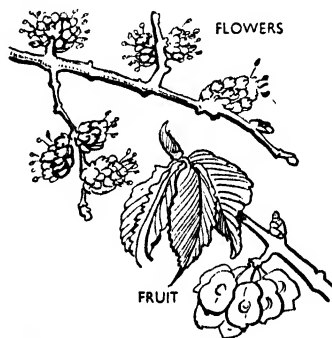
Ellsworth, Oliver (1745-1807), Amer. statesman and jurist, b. Windsor, Connecticut; studied at Yale and Princeton, and practised law at Hartford, 1771. Was a member of the General Assembly of Connecticut, and held many legal and political offices in the state. Advised Washington to send Jay to England to negotiate a new treaty. Appointed by Washington as chief justice of the Supreme Court, 1796, and was sent by Adams to France to negotiate a new treaty.

Ellsworth Highland, part of Antarctica (q.v.) discovered by Lincoln Ellsworth (q.v.) on his trans-antarctic flight in 1935. See L. Ellsworth, *Beyond horizons*, 1938.

Ellwangen, Ger. tn in the *Land* of Baden-Württemberg (q.v.), on the Jagst, 44 m. ENE. of Stuttgart (q.v.). It is first mentioned in 750, and in 764 a Benedictine monastery was founded here. Later it was an eccles. principality. There is a splendid 12th-cent. Romanesque church with 3 towers, and on a hill overlooking the tn is a medieval castle and a pilgrimage church. Pop. 10,700.

Ellwood, Thomas (1639-1713), author and Quaker preacher, b. Crowell, Oxon. He was an intimate friend of and reader to Milton after he became blind. E. first suggested to Milton the idea of his 2nd epic, *Paradise Regained*, after reading the MS. of *Paradise Lost*, 1665. E.'s own works include *Forgery no Christianity*, 1674, *Sacred History of the Old and New Testaments*, 1705-9, *Davidicis*, a poem, 1712, and an autobiography, 1714.

Elm, the name applied to species of *Ulmus*, 4 of which occur in Britain, while all are to be found in N. lands and



COMMON ELM

on Asiatic mts. There are some 18 species of the *Ulmus* genus of the *Ulmaceae* family and all are easily cultivated, flourishing in almost any soil or situation. The fruit is characteristic, being a one-seeded samara, and the leaves are curious, the sides being unequal in size. *U. campestris*, the common or small-leaved E., and *U. montana*, the wych-E. are the best-known Brit. species; *U. americana* is a tall tree and yields a good timber. The common E. is abundant in England, France, Spain, and Italy; it sometimes attains great age and size, endures in smoky conditions and is familiar in London parks. Formerly its timber was used for water-pipes and the keels of ships. The wych-E. also indigenous to Great Britain, is also known as the Scotch E.

Elm Park, see HORNCHURCH.

Elman, Mischa (1891-), Russian violinist of Jewish descent, b. Talmi, Russia. Trained first at Odessa and later by Auer in St Petersburg. He first appeared in London in 1904, and in New York, 1906, and became one of the leading violinists of the world.

Elmes, Harvey Lonsdale (1813-47), architect, b. Chichester; son of James E., architect and writer on architecture, who trained him. In 1836 he won the important public competition for St George's Hall, Liverpool. Although building began in 1836, he d. before it was finished.

Elmina, once an important Dutch trading settlement on the coast of Ghana, with a very fine castle built by the Dutch. E. was the first European settlement on the W. coast of Africa. The first fort was built in 1481 and was named São Jorge da Mina—St. George of the Mine. The castle took 80 years to complete. E. is now little more than a fishing vil.

Elmira, cap. of Chemung co., New York, U.S.A., on Chenung R. (Newtown Creek), 74 m. from Syracuse. An important railway centre. The more important industries include railroad car shops, steel bridge plants, valve and radiator works, and the manuf. of shoes, fire engines, silk and knitted goods and bicycles. It is the seat of E. College for Women, and of the noted reformatory. Pop. 49,716. See A. Winter, *The Elmira Reformatory*, 1891.

El Misti, or **Arequipa, Volcano**, grand, almost extinct volcanic mt of the Andes, Peru (19,170 ft), whose snow-capped peak is clearly seen 10 m. NE. of Arequipa. Harvard Univ. erected a meteorological observatory near the summit, in use from 1893 to 1901. There are various stations at Mont Blanc (15,700 ft), Pampa de los Huesos (13,400 ft), and Mollendo (sea-level).

Elmo's Fire, St. brush-like electric discharge which is sometimes seen on projecting objects, particularly on ships' masts and the aerials and wing tips of aircraft. It may appear as an enveloping fire or in the form of short streamers. It is not dangerous.

It is commoner in S. climates and known by other names, such as fire of St. Clara, corposant, etc. The name is a corruption of St. Ermo, or St. Erasmus, patron saint of Mediterranean sailors.

Elmshorn, Ger. tn in the *Land* of Schleswig-Holstein (q.v.), 44 m. SSW. of Kiel (q.v.). It has textile, engineering, and foodstuff industries. Pop. 35,000.

Elmsley, Peter (1773-1825), philologist, classical scholar, and critic. He assisted Davy in deciphering the papyrus found at Herculaneum, 1819. E. produced excellent critical eds. of sev. dramas of Sophocles and Euripides. See F. E. Grelton (ed.), *Elmsleiana Critica*, 1833.

El Musel, see *GIRON*.

Elmhurst Park, residential vil. in NE. Illinois, U.S.A., a suburb W. of Chicago, incorporated 1914. Pop. 18,800.

El Obeld, or **Il-Obeld**, cap. of Kordofan, Sudan, Africa, 240 m. from Senaar. An Anglo-Egyptian army, under Hicks Pasha, was annihilated by a Mahdist force close by (1883). See *KORDOFAN*. E. O. is the terminus of the railway from Cairo. Pop. 18,000.

Elocution (Lat. *eloqui*, to speak), the art of speaking, embracing vocal quality, pronunciation, use of language, and delivery. At one time this term covered

only method and manner of delivery, including so-called 'expression' and 'gesture'. Later, having a wider use, it implied the art of communication through speaking, were it oratory, verse-speaking, lecturing, or reading aloud. The voice is an inherent part of the speaker, and its successful development and management are usually accompanied by an enlargement of the speaker's whole personality. A good voice depends upon breath, as the motive power, open resonators to impart full tone, and precise articulation to give clarity of utterance. An adequate supply of breath is essential to the maintenance of good tone and to carrying power, to facilitate phrasing and to obviate fatigue. Flexibility of vocal pitch allows for variation and subtlety, and control of the resonators ensures that the tone reflects the intentions, intellectual and emotional, of the speaker. Clear articulation depends upon muscular agility; control over the mobile parts of the resonator, jaw, tongue, lips, and soft palate.

E. should consist in the direct training of the factors, breath, tone, and articulation, and, indirectly, of the training of the vocal cords to supply variety of pitch, together with the training of the ear, which is the final arbiter of sound. If the voice is developed for its musical quality problems of pronunciation are greatly minimised. Musical quality depends upon good physiological usage of the organs concerned, whereas standards of pronunciation are dictated by fashion and by regional and social considerations. To use the voice well can do nothing but good, to conform to any given type of pronunciation is a matter of choice. Delivery is also affected by the rate of speaking, by pauses, and by emphasis. These should be appropriate to the matter of the speech, the size of the room being spoken in, and the number and distance of the audience. Too great speed causes inaudibility and mismanaged emphasis obscures the sense. Good phrasing has rhythmic continuity and variety and is easily understood. The spoken word depends, too, upon the use of language and a well-adapted vocabulary. Co-ordination of the physical factors which engender a pleasant and expressive voice, and well-chosen words delivered with ease and confidence, are the hall-mark of the accomplished speaker.

The term E. has tended to lose its wider implications owing to a pre-occupation with the manner of delivery, thus reverting somewhat to the former use of the word. For many people, now, it has unfortunate associations, hence the increased use of other terms, such as speech-training, voice-training (q.v.), oral communication, diction, etc. E. in its widest sense covers the whole field of communication and interpretation by means of voice and speech which are illuminated by the mind and the whole personality, and by the satisfactory fusion of matter and manner.

Eloge (Gk *eulogia*, praise), an encomium or panegyric oration in honour of a

deceased person, describing his merits and services, especially one pronounced by the secretary of the Fr. Academy, or by a newly elected member on his predecessor.

These *éloges académiques* form a considerable branch of Fr. literature. See the *Éloges* of Fontenelle, 1731. Thomas, 1759-70, d'Alembert, 1779-87. Cuvier, 1819-27, and Flourens, 1833-67.

Elohim (Heb. plural of *Eloah*, God), one of the chief names by which God is designated in the Heb. Scriptures. The plural expresses the idea of greatness and supremacy, and is mainly used with a singular verb as a title of the Supreme Being.

Elohist, see PENTATEUCH.

Eloi, or **Eligius**, St (588-660), a metal-worker who became master of the mint at Paris and adviser of Clotaire II and Dagobert I. He is the patron of jewellers and goldsmiths. In 640 he became bishop of Noyon, and he is famous as the founder of many monasteries and hospitals. His feast is on 1 Dec.

Elongation, in astronomy, the angular distance of a heavenly body from some relatively fixed point, such as the angular distance of a planet from the sun or of a satellite from its primary, as seen from the earth. Thus the maximum angular distance of Venus is about 45 degrees.

El Paso, port and cap. of E. P. co., Texas, U.S.A., on the Rio Grande, opposite Ciudad Juárez (El Paso del Norte), Mexico. The industries include smelting, flour-milling, railway car repairing, box-making, and meat packing, and the trade is in copper, silver, lead, wool, hides, and live stock, especially with Mexico. Seekers for nearly perennial sunshine find it at E. P., at an elevation of 3800 ft. Pop. 130,000.

El Paso del Norte (Mexico), see CIUDAD JUÁREZ.

Elphin, tn of co. Roscommon, Rep. of Ireland, formerly the seat of a bishop. The see, however, no longer exists, having been united with Kilmore in 1833. Pop. 577 (1954).

Elphinstone, George Keith, see KEITH, VISCOUNT.

Elphinstone, Mountstuart (1779-1859), historian and statesman, son of the 11th baron E. Educ. at Edinburgh and Kensington, he entered the civil service of the East India Company (1796), and became one of the founders of Britain's Indian empire. E. was aide-de-camp to Wellesley (1803), sharing in his campaign; envoy to Kabul (1808), and resident at Poonah (1810-17). He helped to win the battle of Kirki against the Marhattas (1817), and was made governor of Bombay (1819-27). He ruled wisely in the Deccan, but refused the governor-generalship of India owing to ill-health. He wrote: *Account of the Kingdom of Cabul, and its Dependencies in Persia, Tartary, and India*, 1815, 1839, *The History of India*, 1841, 1866, and *The Rise of British Power in the East* (ed. by Sir E. Colebrooke), 1887. See life by Colebrooke, 1884.

Elphinstone, William (1431-1514), prelate and statesman, bishop of Aberdeen (1483), and founder of King's College,

Aberdeen (1494, completed 1506). He helped to estab. the printing-press of Chepman and Millar in 1507. His chief work is the *Brenarium Aberdonense*, 1509-10 (reprinted 1853). See A. Gardyne, *Life of W. Elphinstone* (D. Laing's ed.), 1878.

El Reno, tn of Oklahoma, U.S.A., 25 m. W. of Oklahoma City. It is a processing, shipping, and marketing centre for an agric. area. It manufs. chemicals and metal products, and there is flour and feed milling, dairying and meat packing. Its industries also include railroad shops and incubator factories. It is the seat of El Reno Junior College. Pop. 11,000.

Elsass-Lothringen, see ALSACE-LORRAINE.

Elsene, see IXELLES.

Elzheimer, or **Elzheimer**, Adam (c. 1578-1610), Ger. landscape-painter. He worked largely in Rome, and was called by the Italians 'Adamo Tedesco.' His pictures are mostly small, painted on copper, and beautifully finished. He excelled in colour and chiaroscuro, and in imitation of nature, and his scenes by torchlight and moonlight were much admired. E. was founder of the school later represented by Rembrandt and Claude Lorrain, his drawings being very Rembrandtesque in spirit. His works include: 'Flight into Egypt' (Louvre), 'Ceres in Search of Persephone,' 'Tobit and the Angel' (engraved by Count Gondt), 'Christianity Triumphant over Paganism,' 'Martyrdom of St Lawrence' (National Gallery). See lives by W. Drost, 1933, and F. Bothe, 1939.

Elsinore, see HELSINGÖR.

Elsler, Fanny (1810-84), Viennese ballerina who fl. at the same time as Taglioni. Her dancing was impassioned and brilliant, and she had great powers as a mime. She obtained successes in Paris and London, but the peak of her career was her astonishing triumph in America, which she was the first great dancer to visit (1840-2).

Elster: 1. **Schwarze Elster** (Black E.), riv. of Germany, which rises near Bautzen, and flows in a generally N.E. direction to enter the Elbe near Wittenberg (qq.v.). Length about 112 m., of which 37 m. are navigable.

2. **Weisse Elster** (White E.), riv. of central Europe, which rises in Czechoslovakia, and after a few m. enters Germany and flows past Plauen, Gera, and Leipzig to meet the Saale S. of Halle (qq.v.). Length about 120 m., of which little is navigable.

Elstow, par. of Beds, England, 2 m. from Bedford. John Bunyan was b. here in 1628, and was baptised in the church, the nave and part of the chancel of which were originally part of the abbey church of a Benedictine nunnery, founded 1059. The bell tower is now detached. Pop. 400.

Elstree, rural dist. of Herts, England, 5 m. W. of Barnet. In the rural dist. is the residential area of Boreham Wood, with large film studios and other industries. Pop. 24,000.

Elswick, a par. and W. suburb of Newcastle, Northumberland, England. It

increased considerably in importance after the opening of Armstrong's engineering works (1847). Pop. 14,760 (1954).

Eltham, par. in the S. of the bor. of Woolwich, London. E. Palace, built c. 1300 and with later additions, was a royal residence from the time of Edward II until that of Henry VIII. Notable is the Great Hall, built in the reign of Edward IV, with a superb hammerbeam roof. Well Hall in E. has a fine Tudor barn dated 1568, a later addition to a house, no longer standing, that used to be the home of Sir Thomas More's daughter Margaret Roper.

Elton, Charles Isaacs (1839-1900), jurist and ethnologist. His interesting *Origins of English History*, 1882, deals with the Celtic element in the Eng. race. He wrote also *Custom and Tenant Right*, 1882.

Elton, Oliver (1861-1945), Brit. scholar. Educ. at Marlborough and Corpus Christi College, Oxford, he became a lecturer in Eng. literature at Manchester, and from 1900 to 1925 was prof. of Eng. at Liverpool. His works include *The Augustan Ages*, 1899, *Michael Drayton*, 1905, 3 *Surveys of English Literature*, 1912-28, which together cover the period between 1730 and 1880, *The English Muse*, 1933, and *Essays and Addresses*, 1939. He was a Fellow of the Brit. Academy.

El'ton, shallow salt lake in the Stalin-grad Oblast of Russia.

Elvan, name given by Cornish miners to dykes of quartz-porphry, granite-porphry, or other Plutonic rock found in association with granite and penetrating sedimentary strata. The rock is granular and crystalline and is called by geologists 'quartz-felsite.' It is used for road-mending and for building stone.

Elvas, tn of Portugal, in Portalegre dist., near the Sp. frontier, 20 m. W. of Badajoz (q.v.). It was once a strong fortress, was besieged unsuccessfully by the Spanish in 1581 and 1658, and was taken by the Fr. in 1808. The tn is overlooked by 2 18th-cent. forts, and has a 17th-cent. aqueduct and a late Gothic cathedral. There is a trade in grain, olive oil, wine, and plums. Pop. 12,000.

Elwes, Gervase Cary (1866-1921), tenor remembered for his fine interpretation of Elgar's *Dream of Gerontius*.

Ely, city of Cambs, 16 m. NNE. of Cambridge, situated on rising ground near the R. Ouse in the midst of the fens. It was one of the last strongholds of the Saxons; here Hereward's 'camp of refuge' held out against the Conqueror. Its cathedral is one of the most beautiful Eng. churches, and one of the largest in Britain. It presents examples of Saxon, Norman, and early Eng. architecture. On its site St Etheldreda founded, in 673, a monastery, which the Danes burnt down in 870; Ethelwold, bishop of Winchester, founded a Benedictine abbey about the year 1000; the present cathedral was begun in 1083 and finished in 1534. Its length is 530 ft, breadth across the transepts 180 ft, height 62 ft, the W. tower is 225 ft high. Between 1322 and 1342 the central tower fell, and the

decorated lantern tower, built by Alan de Walsingham to replace it, is one of the most interesting features of the cathedral as being the only existing specimen of a Gothic dome. The choir exhibits great splendour of carving and sculpture. Among historical personages connected with E. are Bishop Thurston and King Canute. Oliver Cromwell lived here, 1636-40. King's School, a public school for boys, was founded in 1543. Brewing and market-gardening are carried on, and pottery and clay pipes are manufactured. Pop. 9989. See W. D. Sweeting, *Ely*



ELY CATHEDRAL FROM CASTLE HILL.

Cathedral, 1901; B. E. Dorman, *The Story of Ely and its Cathedral*, 1946.

Ely, Isle of, see ISLE OF ELY.

Elymais, anct. dist. of Susiana, in Persia, which derived its name from the Elymaei or Elym, a warlike and predatory people who were also found in the mts of Great Media, and were probably among the most anct inhab. of the country N. of the head of the Persian Gulf. The cap. was Susa. Another important tn was Malamir on the trade route linking the Persian Gulf with the Isfahan dist. See also ELAM.

Elymas, the title of Bar-jesus, who before Sergius Paulus, governor of Cyprus, withstood Paul and Barnabas (Acts xiii). E. = *Magos*, 'Sorcerer,' and the word seems akin to the Arabic *alama*, 'to know.' E. doubtless regarded Paul and Barnabas as rivals competing for the favour of the governor, and employed his black arts against them. Paul replied in kind; and the blindness that fell upon the 'sorcerer' was demonstration of a power behind the apostle greater than any known to E. Cf. Simon Magus (Acts viii).

Elyot, Sir Thomas (c. 1490-1546), diplomat and writer, *b.* Wilts, son of a judge. From 1523 to 1530 he was clerk of the Privy Council, and Henry VIII employed him on sev. diplomatic missions. He was a friend of Sir Thomas More (q.v.). The best known of his works is *The Boke named the Governour*, 1531, an educational treatise. Others are *The Castel of Helth*, 1534, a medical work, *The Image of Governance*, 1540, and *The Defence of Good Women*, 1545. He also in 1538 pub. the first Lat.-Eng. dictionary, and made various trans. which did much to popularise the classics. See life by D. T. Starnes, 1933.

Elyria, city of N. Ohio, U.S.A., 23 m. from Cleveland, with varied manufs., including aircraft, automobiles, electrical products, and chemicals. Pop. 30,300.

Elysium, or The Elysian Fields, the mythical home of perfect happiness for departed heroes and virtuous men favoured by Zeus. Homer's E. is a beautiful meadow at the W. extremity of the earth, beside the R. Oceanus. Later poets had other ideas of it.

Elytra (lik *chutron*), the name given to the horny sheaths which constitute the fore-wings of beetles. They fold over the back, generally meeting in the middle in a straight line, and serve to protect the hind-wings and the soft posterior parts of the body. The presence of E. is the distinguishing mark of beetles, but they are also to be met with in earwigs.

Elze, Frederick Karl (1821-89), Ger. Shakespearean scholar, *b.* Dessau. He was appointed to the chair of Eng. at Halle in 1875. He wrote *William Shakespeare, Englisches Liederschatz*, 1876, and trans. *Hamlet*.

Elzevir, the name of a family of celebrated Dutch printers and publishers of the 16th and first half of the 17th cents. The E.s issued beautiful eds., whose value time has increased. The family is supposed to have come from Liège or Louvain. The founder of the E. Press was *Louis* (1540-1617), *b.* Louvain, who, as a supporter of the Reformation, took refuge in Leyden and joined Plantin (q.v.) as foreman in 1583. Realising his lack of technical skill, E. concentrated on book-selling. He was successful; agencies from Copenhagen to Naples were opened. After his death his eldest and youngest sons, *Mathew* (c. 1565-1640) and *Bonaventura* (1583-1652), carried on the business. Mathew's son, *Abraham I* (1592-1640), worked with his uncle at Leyden for 26 years, during which time much good work was done. In 1617 *Isaac* (1596-1651), 2nd son of Mathew, set up a printing press and became the first printer of the family. The businesses were combined when Isaac retired in 1625. On the deaths of Bonaventura and Abraham I their sons, *Daniel* (1626-80) and *John* (1622-61), worked together until Daniel went to Amsterdam, joining his cousin *Louis III* (1604-70), son of *Joost* (c. 1575-1617), in publishing and printing, and soon surpassing the Leyden press in the excellence of his productions. The printing section closed. Leyden in 1680

and Amsterdam in 1681. It was Isaac who introduced the small format which combined convenience and accuracy of text appealing to students and a daintiness attractive to collectors. The E.s issued in all about 5300 items, some of them beautiful eds. whose value tends to increase. Even so Updike says: 'To have seen an Elzevir volume in prose and another in poetry in this format is to have seen all—or as many as one wishes to see.' The book business continues in Haarlem. See H. B. Copinger, *The Elzevir Press*, 1927.

Elzheimer, Adam, see **ELSHEIMER**.

Em, measure of type, see **PRINTING; METROLOGY**.

Emanation (Lat. *emanatio*, a flowing forth), anct system of philosophy, according to which all existences have successively flowed or emanated from the Supreme Essence, God. This doctrine is found in Egyptian and Indian mythology, in Neoplatonism, and in Christian Gnosticism.

Emancipation, in the Rom. law, was the act by which a father set his son free from paternal authority. The 12 tables required that the son should be formally sold 3 times, bought back, and then liberated according to the ceremony for freeing slaves. See **ABOLITIONISTS** and **CATHOLIC EMANCIPATION**.

Emancipation of Catholics, see **CATHOLIC EMANCIPATION**.

Emancipation of Serfs, in Russia, see **GREAT REFORMS**.

Emancipation of Slaves, see **ABOLITIONISTS; MANUMISSION**.

Emanuel I (1469-1521), king of Portugal, surnamed the Great, the Fortunate; became king in 1495. His reign is the most brilliant in the hist. of Portugal. A code of laws prepared by the king and a court in which chivalry, art, and science were encouraged greatly improved the internal condition of the country. Externally its possessions were extended by the explorations of Vasco da Gama, Cabral, and Albuquerque, and Portugal became the first naval and commercial power of the world.

Emanuel, Frank Lewis (1865-1948), artist and critic, *b.* Bayswater, London. Educ. at Univ. College, London, the Slade School of Art, and the Académie Julian, Paris. His oil painting, 'A Kensington Interior,' was acquired by the Chantrey Bequest for the nation (1912). He was for many years special artist to the *Manchester Guardian*. Pubs. include *Manchester Sketches, Etching and Etchings*, 1930, *Charles Keene*, 1935, and numerous articles and art critiques.

Emba, riv. of Kazakhstan, Soviet Union. It rises in the Mugodzhur Hills and flows 380 m. into the Caspian. There are important coalfields in its basin.

Embabane, see **MBABANE**.

Embalming, the art of preparing dead bodies for preservation from decay, principally by the use of medicaments, or, in modern practice, the scientific process of disinfecting and preserving the human dead and restoring ante-mortem appearance by arterial injection. It was widely

practised by the ancients, more especially in Egypt, where it was carried to a fine art, and the body so preserved there was called a mummy, a word derived from the Arabic for bitumen. Modern E. dates from the 18th cent., when alcohol, essential oils, camphor, saltpetre, pitch, or resin were used. Other substances used were tan, salt, camphor, cinnamon, and other aromatics. Later on fluids were injected, consisting of sodium chloride, alum, potash, glycerine, or composed of alkalis, arsenic, and alcohol. In the Royal College of Surgeons, London.

E.s in anticipation of war, however, have long since fallen into disuse, and it has even become customary for the belligerents to grant a respite to the enemy's trading vessels to leave their ports at the outbreak of war. The Hague Conventions of 1907 confirmed this, and only that power in a state which is authorised to declare war can decree an E., hence, in its hostile sense, it is an act of war. The sequestration by a nation of vessels or goods of its own citizens or subjects for public uses is sometimes called a *civil E.*, in contradistinction to a general prohibi-



United States Information Service: American Embassy

AN EMBANKMENT ON THE MISSISSIPPI

Concrete and steel mats, which will be covered with asphalt, being used to strengthen a Mississippi levee

are still to be seen bodies preserved by Win (1718-83) and John (1728-93) Hunter, the renowned anatomists.

Embankments, mounds, banks, or earthworks raised for the purpose of protecting the land from the inroads of the sea or overflow of rivers; they preserve the level of railways, canals, and roads where a piece of low-lying ground has to be crossed, or they confine a body of water by preventing it encroaching on the land. In recent years land has been reclaimed by the formation of the E. in the IJssel Meer (Zuyder Zee) in the Netherlands, and in the Wash, England. E. are much used for irrigation purposes, e.g. the great dam of the Nile at Aswân. See A. Beazley, *Reclamation of Land*, 1900; R. Minikin, *River and Canal Engineering*, 1920; F. Johnstone Taylor, *River Engineering*, 1938.

Embargo (Sp. 'stoppage'), seizure of a ship or ships, either as a matter of precaution, or in view of hostilities. E. is the most usual form of reprisals, and thus constitutes the temporary or permanent sequestration of the property of individuals by the gov. in times of peace or war.

tion from leaving port intended to affect the trade or naval operations of another nation, known as *international E.*

Embassy, a mission entrusted to an ambas.; the official residence of an ambas. See **AMBASSADORS**.

Ember Days, certain days set apart for fasting and special prayer in the Rom. Catholic and Anglican Churches. The original name is *jejunia quatuor temporum*, the fast of the Four Seasons, of the Prayer Book table of fasts and feasts. It has been suggested that 'Ember' derives from '*tempora*,' or from embers or ashes used as tokens of penitence; but it may also come from the O.E. '*ymbryne*,' a revolution or circuit, i.e. of the seasons. The clergy are often ordained on certain E. D. The council of Placentia (1095) fixed these days for the Wednesday, Friday, and Saturday after the 1st Sunday in Lent, after Whit-Sunday, after 14 Sept., and 13 Dec. The weeks in which E. D. occur are called *Ember Weeks*, and the days *Embertide*.

Embezzlement, unlawful or fraudulent appropriation to his own use by a servant

or clerk of money or goods received by him for and on account of his master or employer. To convict of this felony (*see* CRIMINAL LAW) the prosecution must prove that the accused was a clerk or servant of the person robbed, that the money or goods alleged to be embezzled were received for or in the name of or on account of his employer or master, and that the accused intended to appropriate unlawfully such money or goods. The crime of E. is to be distinguished from larceny (q.v.) in that the original taking of the property was lawful, while the gist of larceny is the wilfully wrongful taking possession against the will of another from the very beginning. Some specific sum must be proved to have been appropriated, it being settled law that a general deficiency in the accounts of the accused will not suffice to prove the charge. Three separate acts of E. may be charged in the same indictment where committed against the same employer or master within 6 months from the first to the last of such acts. If the accused be indicted for E. that will not preclude a conviction for larceny instead, if the facts turn out to be more consistent with the latter crime having been committed. The converse also applies. The punishment for the common law felony of E. is a maximum of 14 years' imprisonment. E. by factors, trustees, and directors is a misdemeanour.

See also FALSIFICATION OF ACCOUNTS.

Authorities: S. Harris, *Principles of Criminal Law*, 1899; H. Archbold, *Criminal Pleading Practice*, 1863.

Emblements, produce of land, such as crops, garden, cereal, and vegetable products, which are the ann. result of the tenant's labour. These are considered in law as belonging to the tenant and not to the landlord; they are subject to the same conditions as personal chattels. Trees, grass, etc., are not E. In the U.S.A. the Eng. common law of E. has been very generally adopted, though in some states the tenant is entitled to compensation not only from his landlord but also from the incoming tenant.

Embolism, plug; a blocking of a blood vessel by a substance carried by the bloodstream from some other part of the circulation. The importance of this condition depends on the source of the plug and its nature, whether it contains infective bacilli, which will cause infective changes at the seat of the plug, or simply acts as a mechanical blocking of the circulation. Both conditions are serious, for when the E. lodges in the brain it may produce paralysis, either with a slow or a sudden onset. Emboli are apt to occur in septic conditions, and are characteristic of pyæmia, a condition in which pus-forming germs are found in the blood. Sudden paralysis of the brain is known as apoplexy (q.v.). E. may originate from the heart. A pulmonary E. may occur in some infected organ. Air E. may occur when air is introduced into a vessel from traumatic injury or during surgical procedures, or during an intravenous infusion. Fat E.

has been known to occur following fractures when there has been much disturbance of the bone marrow.

Embossing, the art of producing raised patterns on the surface of metal, leather, cardboard, or similar substances. Strictly, the term applies only to raised impressions made by means of engraved dies or plates, as opposed to those made by carving, chasing, chiselling, hammering, and the like. Crests, monograms, and addresses are embossed on notepaper. Dies for plain E. are generally cut deeper than those used with colours. In ancient times goldsmiths made much use of this method of decorating cups, vases, bowls, etc., by beating out bosses from the under surface of the metal in ornamental designs. The finishing touches are generally put from the front. E. is largely used in bookbinding (q.v.). *See* Theophilus, *Christian Art of the Eleventh Century*, 1847; L. Haslope, *Repoussé Work for Amateurs*, 1887; J. Harrison, *Decoration of Metals*, 1894; H. Adam and J. Evans, *Metalwork*, 1926; A. Shirley, *Craftwork in Metal*, 1928.

Embracery, the misdemeanour of attempting to influence a juror corruptly to give his verdict in favour of one side or party by promises, persuasions, entreaties, money, entertainments, or the like. A jurymen who corruptly endeavours to influence his fellow-jurymen to take his view is also guilty of E. The jurymen who consents to give a corrupt verdict is equally guilty with the person persuading. The punishment is fine, or imprisonment, or both.

Embrasure. In military architecture, the openings or crenelles between the teeth of a battlement in parapets, flanks of bastions, etc., are called E.s. The name is also applied to the openings in a fort or casemate through which cannon are pointed. In domestic architecture, an E. is the inward enlargement of the cheeks or jambs of a window or door made by slanting the sides.

Embroidery (Fr. *broderie*, from *bord*, edge, which gave the verb *border*, and by transposition *broder*, to ornament the edge), the art of ornamenting in relief with needle and thread of silk, wool, linen, metal, etc., various kinds of fabric. The mummy clothes of ancient Egypt show the earliest extant E., and the 'pomegranates of blue and purple and scarlet' of the book of Exodus were of E. Biblical references to the art abound, and the finest and most elaborate work has always been destined for church vestments and furniture. The Babylonians were renowned embroiderers, whose work was sought after throughout the East. The Phrygians, too, were such marvellous embroiderers that the Greeks came to call their work *phrygiæi*, and the Romans *opus phrygium*; their name for the beautiful gold-embroidered work, *auriphrygium*, gave the Eng. eccles. word *orphrey*. Homer and other classical writers refer to and describe magnificent embroideries. The art reached its greatest perfection in the early Middle Ages, when also it came to be more widely used for secular purposes. The most distinguished

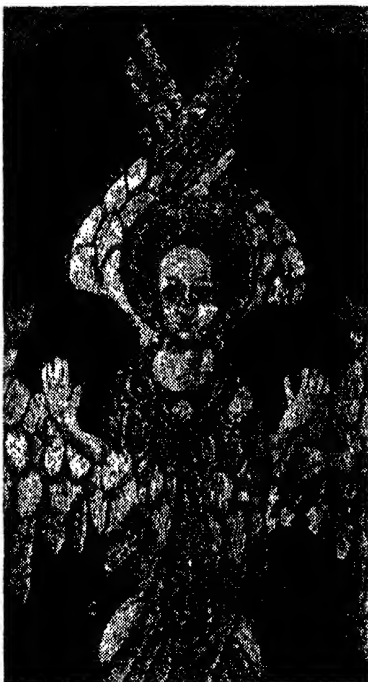
artists did not scorn to make the designs from which the highest ladies in the land executed their embroideries. No workers were more skilled in the craft than the Eng., a fact to which the Bayeux tapestry (which is not tapestry, but E., traditionally ascribed to William the Conqueror's wife and her ladies) and the Syon

or 'Madeira Work.' Later and more elaborate designs are Renaissance E., Richelieu E., Venetian E., Danish white E. (called 'Hedebo'), and 'Pique' E.

The Chinese excel as embroiderers, their best work being done on silk, and their needle-painting (i.e. shaded flat stitch E., by which birds, flowers, etc., are reproduced as by brush painting) is exquisite. Gold and silver thread E. is sometimes used in Chinese and Jap. work. The Hindus use threads of silk, gold, and silver, together with spangles, beads, pearls, coins, and precious stones. Gold and silver E. is frequently used to decorate vestments (q.v.) and church furnishings. It is usually found in combination with many other forms of E., sometimes incorporating jewels and braids and often worked in ant and extremely beautiful designs. While in England to-day all hand E. is a rapidly declining art, even vestment work being largely carried out by machine, traditional hand E. of the finest calibre is still practised in many convents and among vestment workers. Gold and silver E. is usually worked in a frame and the finer materials are mounted on to a thick fabric before E., a stiletto (piercing tool) being used for this kind of E. work on the heavier materials such as brocades, plush, leather, etc. Gold or silver thread is usually couched, i.e. overcast down with a special fine thread of twisted silk of a matching or contrasting colour.

The instruments needed for E., other than the needle, are sharp pointed E. scissors, for cut-out work; a stiletto for piercing holes; and frames on which the fabric is stretched when the E. work is unsuitable to be 'held in the hand.' A square or rectangular frame is used for large and elaborate work, a small circular frame of Chinese origin, called a 'tambour,' being used for small work. In the past, large pieces of E. were sometimes filled in with chain stitch worked with a crochet hook on material held in a circular frame, and this was known as 'tambour work.' Three different kinds of needles are used in E.: crewel needles which are long and sharp and can be obtained in sev. sizes to suit varying thicknesses of thread; chenille needles which are shorter with large eyes and suitable for heavy work fixed to a frame; and tapestry or wool needles used for E. on loosely woven materials, such as canvas, net, and coarse linen, and also for whipping and lacing E. stitches. Good material for E. should be chosen as an artist selects his canvas; and the threads used should usually match the texture of the ground material, e.g. silk thread on a silk material, linen, cotton, or mercerised threads on a linen or cotton background, and wool on a woollen cloth; in the case of tapestry work on canvas, silk or wool threads are generally used. Evenly made stitches, tone or colour effect, and design and arrangement all contribute to obtaining a pleasing result in E.

The prin. E. stitches are: *running stitch* (single or double), which is used for



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DETAIL FROM THE SYON COPE, ENGLISH,
13TH CENTURY

Silver gilt and silver thread and coloured
silk embroidery on linen.

cope (now in the Victoria and Albert Museum) bear testimony. Later in the medieval period E. was used for heraldic devices, and with this a complicated symbolism of colour and design came into being, and this is still observed in heraldic and eccles. E. Saxony was the first country to produce 'white embroidery' worked on muslin and other white fabrics, which was used almost exclusively for trimming lingerie and household linen. Switzerland, Scotland, and England later became noted for this particular E. which was known as *Broderie Anglaise*. Eng. E.,

outlines, etc.; *back stitch*, used in quilting or as a foundation for threading a self or contrasting colour, e.g. Pekinese stitch (frequently used in Chinese embroideries); *stem stitch* is worked from left to right and is a kind of back stitch used in a variety of ways, such as outlines, fillings, etc.; *herringbone* and *chevron stitches* are border or band stitches also worked from left to right; *looped stitches*, which are usually worked from left to right, include blanket stitch, cretan stitch, buttonhole stitch, feather stitch, chain stitch, and fly stitch, and these stitches can be used in a variety



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HINDU PEASANT COSTUME. SATIN EMBROIDERED IN COLOURED SILKS: 19TH CENTURY

of ways; *flat* or *satin stitch* (also called Chinese flat stitch) is used in needle-painting by varying the length of the stitch and using a variety of shades and colours; *knot stitches* include the single or Fr. knot, and the more elaborate Bullion stitch. In Jap. E. the design is sometimes worked in knot stitch and outlined with gold thread; *couching* is the laying down of a thick thread, cord, or sev. fine threads along an outline and 'couching' down at regular intervals with a fine thread; *cross stitch* should be worked on material which has an even warp and weft which can be counted easily, and the crossing threads should always be worked in the same direction.

Darning E. is used as a decoration on huckaback towels, for filling in or background work, also on shadow work where some E. stitches are done on the back of a transparent material to form a 'shadow.'

Appliqué or *applied work* is laying a motif over a piece of material and fixing it on with E. stitches. The motif should be cut on the same thread of material as the background to which it is to be attached,

and it is buttonhole stitched, blanket stitched, couched, or satin stitched into position; *découpé* is an inverse form of appliqué, i.e. the design is cut out of the material and a coloured patch inserted beneath it and stitches embroidered over the raw edges. *Smocking* is the use of E. stitches to hold in place fullness or width in a garment, particularly in children's dresses, overalls, etc., and is a traditional Eng. craft. *Eyelets*, *scalloping*, etc., are holes or edgings overcast or buttonhole stitched, used in *Broderie Anglaise*, or the Richelieu and Renaissance work which consists of a similar but more elaborately cut design held together by a series of bars worked in buttonhole stitch over sev. strands of thread. *Drawn thread* is the name given to every sort of needlework for which the drawing of threads (warp and/or weft) is the preliminary step to the E. or interlacing of the loose threads of the material to form a pattern. *Tapestry* (of very ancient origin) is the name given to E. worked on counted threads. The stitches entirely cover the material, which is usually of fine or coarse canvas, the threads used being of silk or wool. Various stitches are used, such as cross stitch, *tent stitch* (i.e. a small single stitch taken across the warp and weft thread of the canvas), gobelin stitch, straight stitch, etc. *Needle weaving* is worked by drawing out threads of a material and darning a band in various coloured threads to make a squared design.

Quilting is the holding into position of 2 or 3 layers of material by the use of E. stitches—running or back stitch—worked to form a pattern. Machine stitches can also be used. Cotton wadding, lamb's wool, flannel, wool domette, or feathers may be inserted between 2 layers of material which are stitched together by drawing a needle and thread through all 3 layers. This is known as Eng. quilting and is used for bed covers, bed jackets, dressing gowns, etc. Soft materials with a sheen are most suitable for this work, as the emphasis on light and shade is part of its beauty. It. quilting has no wool filling, and the design is carried out in double outline through which a cord or thick thread is run, so emphasising the design in relief.

Patchwork is the use of odd scraps of material, preferably of uniform thickness and of the same kind, i.e. all cotton or all silk. The pieces may be tacked over pieces of paper cut to the required size or sizes. The patches are oversewn on the wrong side and the paper torn away afterwards, and sometimes it is finished off by outlining the joins with an E. stitch such as herringbone or feather stitch. Colour and design are important in this old-fashioned art, and examples vary from the purely utilitarian to the most beautiful and artistic creations. Owing to conditions in early Amer. settlements, patchwork there reached a high stage of development.

Machine embroidery.—From the old hand-embroidery craft of Central Europe, and of Switzerland in particular, there developed machine chain-stitching and

mechanical E. Chain-stitch E., carried out all over the world and on a notably large scale in India, can be produced by single-needle sewing-machines of the Singer type. Recent models are fitted with a vibrating needle which stitches a close zig-zag covering stitch of varying width as the work is moved under the needle. The early hist. of sewing and E. machines is closely connected. Neither machine could have developed without the principle of the double-ended needle with centrally placed eye. Such needles were patented by C. F. Weisental in 1775 and by the Viennese tailor, Joseph Madersberger, in 1814. The first practicable mechanical E. frame with 20 double-ended needles simultaneously operated by a pantograph so as to reproduce the design traced by the master-pointer in the hand of the operator was built to the specifications of Joshua Heilmann of Mulhouse in Alsace. The needles were passed to and fro between 2 carriages each mounting 20 pinners and moving horizontally, one at the front and one at the rear of the frame, which itself moved vertically. This hand-frame, the prototype of which was built in 1828 at Mulhouse, was improved so as to carry 170 needles and was brought into service in 1829 at the works of Franz Mange at St Gall in Switzerland. Heilmann's patent frames were built by the firm of Saurer at St Gall, a firm which is still in existence to-day. The use of these frames spread to the neighbouring Austrian prov. of Vorarlberg, to Bohemia (notably Letovice near Brno), and to Saxony (Plauen), all before 1873. The first mechanical frames were used in England by the Manchester firm of Houldsworth, and in Scotland by Gibson Brothers of Glasgow. Other Eng. centres were Macclesfield and Nottingham. The first prov. E. works in the Russian Empire was opened at Kalish in Poland in 1880. Later factories were estab. at Vilna. Moscow had possessed an E. works since 1870. In contrast to these needle-frames, mechanical but hand-operated, the Swiss manufacturers also developed Schiffli ('shuttle') E. machines which were power-operated. The first steam-driven machine was produced by Rieter of Winterthur in 1865, and an improved model by Saurer of St Gall in 1876. This machine performed 35 stitches per min. Later developments have consisted principally in the progressive lengthening of the frame. The large output possible from power machines has made the use of hand machines uneconomic, and few of the 30,000 reported as in use in 1890 now remain in operation. A type of machine E. can be executed in the home with the aid of modern sewing-machines (q.v.) of which there are various types, e.g. swing needle. See also NEEDLEWORK; SAMPLER. See Elsie Mochrie, *Simple Embroidery*, 1947; Mary Thomas, *Dictionary of Embroidery Stitches*, 1948; Louisa E. E. Judd-Morris, *An Introduction to Embroidery Stitches*, 1948; Iris Hills and others, *Embroidery Stitches* (Needlework Development Scheme pamphlet), 1952;

Joan Nicholson, *Contemporary Embroidery Design*, 1954; Hebe Cox, *Embroidery Technique and Design*, 1954; and Dryad leaflets on embroidered dresses for children, smocking, cross-stitch, needle weaving embroidery, and embroidery flowers.

Embrun, Fr. tn in the dept of Hautes-Alpes, on the Durance. It is a winter-sports centre, and has textile, flour-milling, and foodstuff industries. Pop. 2700.

Embryology, study of the development of the living organisms, or of the formation of a new individual or embryo from an ovum. As such it is a branch of the science of biology. For a hist. of the rise of the science of E. and for a general view of it, see BIOLOGY. In the higher plants and animals the cell (q.v.) is a highly complex structure, and the greatest complexity of functions and changes takes place in the *nucleus* of the cell. Within the cell of an animal and of certain plants is the *centrosome*, which is neither part of the protoplasm nor of the nucleus. This centrosome begins the process of cell div. by itself dividing into 2 parts. Afterwards the nucleus also splits, and then the whole cell divides. The nucleus contains a number of threads, the *chromosomes*, which become visible during cell div., and the number of these is constant for any given species. In the higher types of animals and plants the individual is composed of myriads of cells united together into tissues and organs and so into the organism. The original cell from which these were formed by successive divs. is described as the ovum or egg, and in the higher animals and plants this must be fertilised to enable it to develop. In the lower plants and animals, including some insects, the natural development of unfertilised ova is not infrequent, and in others a physical stimulus may initiate development (see EXPERIMENTAL EMBRYOLOGY). Such development is said to be parthenogenetic.

In the higher animals, some of the earliest cells formed by the div. of the ovum constitute the germ cells of the new animal. This fact led to the theory of the continuity of the germ plasma (see BIOLOGY), but this theory is not applicable to the germ cells of plants or of many lower animals. Germ cells of the female are ova; those of male animals are spermatozoa, and of plants spermatozooids (except those of flowering plants, which are non-motile male gametes, as described below). Fertilisation is the union of an ovum and sperm, and takes place in the body of the female of higher animals and in the ovules of plants. Most aquatic animals and plants, and even many fishes, liberate the ova and sperms in the water, where they unite. The eggs of frogs are fertilised externally, the male adding spermatozoa as the ova appear.

Spermatozoa are usually some of the smallest animal cells, and are very active. Each has a 'head' consisting of the nucleus surrounded by a thin film of cytoplasm and connected by a 'middle

piece' with the 'tail,' or flagellum, a fine hair-like part which by its movement propels the sperm along, tail first. The flowering plants, with the exception of some Gymnosperms, have no motile spermatozooids, and the function of these is performed by a nucleus and a small amount of cytoplasm formed in the pollen grain. This sends out a tube which penetrates the ovule and conveys the fertilising nucleus to the ovum.

Generally, compared with the sperms, and even with other cells of the organism, the ova are large and laden with food material, the yolk, but some organisms have small ova with the food supply deposited in cells around them.

In the formation of the ovum the mother cell, or oocyte, divides first into 2 unequal cells: the smaller of these is the first polar body, and is usually extruded. The other, the secondary oocyte, divides, forming the ovum and the second polar body, and this, too, is usually extruded. During the first div. the chromosome number is halved (see CELL) and fertilisation restores the full number of chromosomes. In parthenogenetic development, the full complement of chromosomes is sometimes gained by the fusion of an egg with a polar body, or by failure to reduce the number of chromosomes in the div. of the oocyte. The 'accidental' development of individuals with the single number of chromosomes usually results in abnormality, but single and multiple numbers can be normal in some plants and animals. The spermatozoa are developed from spermatocytes in the testis of the animal. Each spermatocyte divides twice, forming 4 spermatozoa, and the first div., like that of an oocyte, reduces the chromosome number to half. Although sometimes sev. sperms may enter the cytoplasm, the nucleus of only one fuses with that of the ovum. The 2 nuclei fuse completely, losing their individuality, and in the subsequent divs. each nucleus may be regarded as derived half from the nucleus of the sperm and half from that of the ovum. Soon after fertilisation has taken place the cell begins to subdivide. The methods of div. of the fertilised ovum of an animal depend upon the quantity and disposition of the yolk. Where there is only a small amount of yolk, as in amphioxus or manulans, the ovum divides to form a sphere of cells. In those cases where there is a large amount of yolk collected at one pole of the ovum, as in the frog, the cells form more quickly and are much smaller at the other pole, giving an unequal div. If the result of segmentation is a ball of cells, giving a hollow sphere, it is called a blastula; if it is a solid ball of cells, a morula; and if partial, so giving a disk of cells, it is known as a blastoderm. The next stage results in the formation of a gastrula. Usually the blastula becomes invaginated, one hemisphere sinking into the other, giving rise to a 2-walled sac with the opening known as a blastopore. In the higher animals a middle layer, the mesoderm, is formed between the outer layer (ectoderm) and the inner one

(endoderm). The ectoderm forms the epidermis, the nervous system, the lens of the eye, and certain glands; the endoderm lines the midgut and its outgrowths; and the mesoderm forms the muscle, the skeleton, most of the viscera, blood and lymph vessels, blood, connective tissue, and certain membranes. See also EXPERIMENTAL EMBRYOLOGY. For the further facts of recapitulation and continuity of germ plasma, and for bibliography, see BIOLOGY.

Emden, Ger. seaport in the *Land of Lower Saxony* (q.v.), 123 m. NW. by W. of Hanover (q.v.). It lies on the Dollart (see EMS) at the terminus of the Dortmund-Ems and Ems-Jade canals. In medieval times it was the cap. of a co. of E. Friesland (q.v.), and in 1595 became a free imperial city under Netherlands protection. In 1744 it went to Prussia. It was in Fr. hands 1810-14, then passed to Hanover, and became Prussian again in 1866. E. is Dutch in appearance, and is intersected by canals. Most of its important buildings were ruined in the Second World War. The shipping and shipbuilding industries are of great importance, and the tn has been known as a herring port for sev. centuries. Pop. 52,000.

'**Emden**,' Ger. raiding cruiser, which had a notable career during the First World War under the command of Capt. Müller. At the outbreak of the war the *Emden* was in E. waters, and within a few days joined Adm. von Spee's fleet at Tsingtau. At Müller's request she was given a roving commission. In order to obscure her identity the *Emden*, which had only 3 funnels, put up a dummy 4th funnel, which made her resemble, at a distance, a Brit. warship. She made towards Indian waters, reaching the Bay of Bengal in the 1st week of Sept. 1914. Her first capture was a Gk steamer, *Pontoporros*, carrying Indian coal to a Brit. port; this occurred on 10 Sept. Other successes came quickly, as many as 6 vessels being prepared for sinking at the same time. The procedure followed by Müller was to transfer from these ships to his own the articles he required, to tranship their personnel to the *Pontoporros* and then to sink their vessel. On 18 Sept. the *Emden* bombarded Madras and set fire to the oil tanks. Such a career could not be allowed to continue for long, and soon an organised search was made for the *Emden* by ships of Britain, France, Japan, and Russia. On 28 Oct. she sank a Russian cruiser in Penang harbour and also a Fr. ship which attacked her. She was eventually sunk off the Cocos Is. by the Australian cruiser *Sydney* on 9 Nov. 1914. There was nothing particularly brilliant in her career, for she generally hit unarmed ships or those which were no match for her armament, and when she did eventually meet a ship on more equal terms she was outclassed. Similar tactics were pursued by the Ger. pocket battleship *Graf Spee* (q.v.) in the Second World War, the ship being defeated by 3 small cruisers off Monte Video in Dec. 1939 and soon afterwards scuttled by its crew.

Emerald, a precious stone belonging to the beryl (q.v.) species, its green colour alone differentiating it from the other beryls. It occurs as 6-sided prismatic crystals of the hexagonal system, is transparent or translucent, has an uneven conchoidal fracture, a vitreous lustre, becomes much harder on exposure to air following extraction from the mine, and is rendered electric by friction. Oxide of chromium is supposed to give it its green colour. The E. is cut on a copper wheel with emery. The finest stones are found in Muzo, Colombia, and there are mines also in Siberia, at Henbachthal, and at Canjargum in India. The E. was greatly valued by the ancients, who invested it with talismanic and medicinal properties; it was supposed to be good for the eyes, and Nero, among others, wore E. eye-glasses. It ranks with the diamond as one of the choicest and costliest of stones.

Emerald Copper Ore, see DIOPHASE.

Emeritus, term applied, among the Romans, to a soldier who had served out his time; now extended to designate anyone (especially a prof.) who has retired from office on account of old age or infirmity.

Emerson, Ralph Waldo (1803-82), Amer. lecturer, essayist, and poet, *b.* Boston, son of a Unitarian minister. He was educ. at Boston Lat. School and Harvard Univ., and was ordained in 1829, but resigned 3 years later as a protest against the administration of the Lord's Supper. In 1833 he first visited Europe, and met Landor, Carlyle, and others. His friendship with Carlyle lasted all his life and resulted in an exchange of notable letters. The following year he began in real earnest his life of lecturer and writer, and at once estab. his position as a leader of the New England transcendentalists, although he disclaimed sympathy with their school of philosophy at large. He worked side by side with Bronson Alcott, Margaret Fuller, Channing, and Thoreau (qq.v.), but in a broader spirit; and with them he developed transcendentalism, particularly in its theological aspect, as a protest against dogmatic rationalism in religion. His attitude in philosophy was strongly influenced by Platonism, the Ger. idealisms of Hegel, Fichte, and Schelling, and the Fr. idealisms of Cousin and de Staël, resulting finally in an indefinite conception of the God-like nature of the human soul and the correlation of human and divine wisdom, which may be described as a vague but inspiring pantheism. Of his lectures, the courses delivered at Boston during 1835 and 1836 on *Representative Men* and *The Philosophy of History* were perhaps the most noteworthy. His prose works are for the most part extensions and revisions of his lectures, and show in an even more marked degree his truly transcendental lack of purely logical coherence, as might well be expected when his method of working is considered. E. was wholly an intuitionist, and recorded his impressions and flashes of inspiration as they occurred to him, subsequently synthesising them under such headings as seemed conveniently comprehensive. As a result of this, it

may be observed in his writings that thoughts and criticisms have been too often distorted, merely to fit their expression into an epigram. E. himself confessed that 'I do not know what arguments mean, in reference to any expression of a thought.' His writings betray a complete absence of that symphonic style which is indispensable to a philosophy pure and simple, and they are, moreover, full of self-contradictions. These contradictions are not the result of any



R. W. EMERSON

After a crayon drawing by Samuel Rowse

systematic evolution within the author's mind; they are rather the spontaneous interpretations, but in different moods, of the same mental experience. Each idea is complete in itself, rather than concatenated with its context. His work thus resolves itself into the expression of a personality which is governed by emotion, not by reason. And it is this predominant characteristic of E. which, however derogatory it may be to his work as pure philosophy, gives to it the charm of geniality, warmth, and confidence which is the secret of his undoubted attraction. As a theorist, devoted to the study of the higher instincts and their spiritual significance, and living out of touch with reality, he was an anomaly. For instance, he praised freedom, yet was slow to lend his support to a specific abolitionist movement against Amer. slavery. And he preached always the 'infinite of man'; he loved the 'human idea,' but his admiration for the unit, physical man, was by no means excessive. By reason of his elevation of character and sentiment, E. was essentially a poet.

It is in his poetry that the true E. is most clearly delineated; yet, in spite of his

eloquent pages on rhythm in *Poetry and Imagination*, it must be confessed that his verses are often far from musical. One can quarrel, however, only with his incomplete mastery of form and technique. Whatever the faults of his outward expression—the rough metre and forced simile of his poetry, or the inconsequence of his prose—the inner ideas of his writings are always lofty of conception, and in their own way frequently of rare beauty. E. was a real prose-poet of a high order, and by the beauty of his thoughts, the terse eloquence of their expression, and the broad spirit of optimism in his works has gained his wide recognition and popularity. E. has been recognised by Americans and by sound European critics as one of the greatest of the writers of his country. His essays have become American classics and have had a profound influence in their own country. In spite of some roughness of form, his poems have caused him to be recognised as one of the most original poetic voices of the U.S.A. Unlike Europeanised poets like Longfellow, he turned to his own country, its own fauna and flora, for subjects for his lyrics. His extended stay in England gave him the opportunity to write his *English Traits*, 1882, still one of the best books ever written on the subject. The Eng., according to E., concentrated all their attention on productivity—an observation which seems curiously topical to-day—but this exclusive attention to mechanical things, in E.'s opinion, had its drawbacks; for where 'the whole bias of the nation is a passion for utility,' man is sacrificed to the demands of the machine. Even worse was the apparent neglect of the higher things of life—the Eng., he says, are 'materialist, economical, mercantile' and 'their mind is in a state of arrested development.' Because of their preoccupation with money, E. concluded that the Eng. were its slaves and dupes. In spite of all this, E. had to admit that 'if there be one successful country in the universe for the millennium, that country is England.' All the world, he observed, imitated England, read its books, saw its plays, bought its newspapers and helplessly envied its luxury. Yet E. was aware that success did not necessarily lead to popularity; the national 'habit to brag' stood in the way, so that the Eng. traveller abroad, with his disdain of the rest of mankind, was a proverb for uncomfortable and offensive manners. To-day this portrait of the Eng. is hardly exact, even if it ever was; and indeed the characteristics which E. saw in the Victorians, and which, ironically enough, we see or fancy we see to-day in the Americans, are merely the externals of leadership or the cloak worn by the most wealthy, most envied, and most powerful nation in the world. His chief works are: *Nature*, 1836, *The American Scholar*, 1837, *Literary Ethics*, 1838, *Poems*, 1847, *Essays on Representative Man*, 1849, *The Conduct of Life*, 1860, *Society and Solitude*, 1870, *Journals*, 1912. His correspondence with Carlyle was ed. by C. E. Norton in 1883, and his *Letters* were ed. by R. L.

Rusk in 6 vols., 1939. See lives by J. E. Cabot, 1887, G. E. Woodberry, 1907, V. Wyck Brooks, 1932, H. Hawthorne, 1935, E. L. Masters, 1948; also B. Ferry, *Emerson To-day*, 1931.

Emerson, William (1701-82), b. Harworth, near Darlington; mathematician who, failing in an attempt to follow his father's profession of schoolmaster, lived in retirement, pursuing his favourite studies of mathematics and mechanics. He was eccentric, but possessed of rare intelligence and energy. His chief works are: *The Doctrine of Fluxions*, 1748, *The Projection of the Sphere, orthographic, stereographic, and gnomical*, 1749, *The Principles of Mechanics*, 1754, *A Treatise of Navigation*, 1755, *The Elements of Optics, in four books*, 1768.

Emery, Isabel Winifred Maud (Mrs Cyril Maude) (1862-1924), actress, b. Manchester, the daughter and granddaughter of actors. At 15 she appeared for the first time in London at the Princess's Theatre. In 1881 she became a member of Henry Irving's Lyceum company, understudying Ellen Terry and playing her own parts; she toured twice with this company in America. She married Cyril Maude in 1888. From 1896 to 1902 she played at the Haymarket. She appeared as Beatrice to Tree's Benedick, took *Olivia* on tour, and also played in H. A. Vachell's *Her Son*.

Emery, an impure variety of crystalline corundum (Al_2O_3), being mixed with oxides of iron and silica. It was originally obtained from Cape Emeri in the is. of Naxos, but is now largely worked in various parts of Asia Minor and near Philadelphia, U.S.A. E. is a purple-black solid, next in hardness to diamond, and is largely used as an abrasive and polishing agent, for cutting and grinding glass, metals, and certain gems. E. wheels are made by mixing the powdered E. with some binding material and subjecting the mixture to heat and pressure. E. paper and cloth are made by dusting the powder over the material which has been coated with glue. Pure corundum and the artificial 'carborundum' (SiC) are now largely prepared, and have superseded E. to a certain extent.

Emesa (Syria), see Homs.

Emetic, agent that produces vomiting. The origin of the word dates back to antiquity, and in the days of the Romans not only was it a regular accompaniment of a banquet but it was an intrinsic part of daily life. E.s are often replaced by the stomach tube or hypodermic syringe. The E.s most commonly in use are: copious draughts of warm water, mustard and water, or common salt and water; they are useful in cases of poisoning. Apomorphine (q.v.) is an E. which is given hypodermically. It acts directly on the vomiting centre in the medulla of the brain. Ipecacuanha (q.v.) is an E. drug which is given by mouth.

Emou, see EMU.

Emigration, the act of leaving one country in order to settle in another. In the early ages E. was carried on by whole nations, who, having exhausted the

fertility of their own lands, sought to acquire fresh ones by conquest. Nowadays it is more of an individual process, and is determined by the greater prospects of material benefit offered by life in the destined country. E., therefore, usually takes place from the older countries. It first assumed notable proportions in the 19th cent., when America was the chief goal. The greatest exodus was from Ireland, and the total number of emigrants from that country between 1851 and 1910 was 4,187,000, leaving the country far less thickly populated. In many European countries emigrants have been actuated by a desire to escape from tyrannical political institutions, notably the Huguenots who left France at the end of the 17th cent.; and Germans and Austrians, most of them Jews, who emigrated in the years preceding the Second World War.

At the close of the Napoleonic wars E. from Great Britain to the colonies overseas was promoted as a remedy for unemployment. Opinion was, however, divided. Wm Horton, who was under-secretary for war and the colonies in 1822, advocated state-aided and mass E. of able-bodied workers, who were to be given free passages and free grants of 100 ac. of land in the colonies, free farming implements, and a year's provisions. Edward Gibbon Wakefield (q.v.) held that the pauper emigrant was unsuited to conditions overseas, and he evolved a system of state-aided E. In 1823 and 1825 Horton induced parliament to try his scheme on a small scale. Later he secured an amendment of the Poor Law Act of 1834 to enable pars. to mortgage their poor rates so as to provide for their able-bodied paupers in the colonies; a number of emigrants were assisted under the Act. But this plan lacked the vision behind the ideas of Wakefield, whose system of colonisation formed the basis of the gov. policy of settlement in South Australia and New Zealand and generally thereafter. About 1832 the gov. adopted the policy of assisting the E. of women, mechanics and agric. labourers, and in 1834 an Act was passed embodying Wakefield's principles in the settlement of S. Australia. In 1845 the Brit. Gov. set up the Colonial Land and Emigration Board, the original purpose of which was to take over the work of the South Australian Commission appointed in 1835 for carrying out Wakefield's scheme. The Board's functions were extended to control the whole E. movement to the colonies and the sale in Great Britain of colonial land. Between 1840 and 1873 the Board granted free or reduced passages to over 352,000 settlers. But from 1850 onwards the general view began to gain ground that gov. supervision of E. was unnecessary. The colonists became self-governing, and assumed the control of their own lands; the prevalent opinion, led by the Manchester school, was that the home gov. need take no further interest in Brit. persons who left the home country, and gradually the duties of the Board were absorbed by the Board of Trade, the Colonial Office and the colonial legisla-

tures. From 1878 till the First World War the gov. took little part in E. beyond subsidising a small office known as the Emigrants' Information Office (see OVERSEA SETTLEMENT DEPARTMENT), estab. in 1886, which gave information to those wishing to emigrate whether to the colonies or to foreign countries. Their prin. destinations were Canada, U.S.A., Australia, New Zealand, and South Africa, in the order named. By 1912, however, attention began to be attracted to the importance of empire development and the need for a better distribution of the white pop. within the empire. The Brit. Gov., through the Overseas Settlement Committee, pursued a vigorous policy of E., through the medium of assisted passages to the Dominions, in the 12 years immediately following the First World War, but in the ensuing world economic depression E. declined, and in the next decade more people returned from the overseas empire to Britain than emigrated from Britain to the overseas empire. Australia made new immigration plans after the Second World War. The Federal Gov. held itself responsible for the recruiting, medical examination, and transportation of Brit. migrants under the assisted and free passage schemes, and for their employment. Brit. service personnel were encouraged to stay in Australia after their discharge—an opportunity later extended to members of the Brit. forces in India, the Middle East, and the Far East. New factors stimulating E. were high taxation and the reduced opportunities for enterprise and exceptional effort. Those not satisfied with the measures and the security of the welfare state sought opportunity in Australia, New Zealand, and, on a greater scale, in Canada. Parallel with this movement there was increased E. to the U.K. from Ireland and the West Indies. See COMMONWEALTH AND EMPIRE SETTLEMENT ACTS; EMIGRATION SOCIETIES. See also C. W. Baird, *History of the Huguenot Emigration to America*, 1885; J. W. Gregory, *Human Migration and the Future*, 1928.

Emigration Societies, organisations aiding persons to emigrate to Brit. dominions and colonies. The chief among them are: *Salvation Army* provides farm training for boys and finds situations overseas for boys, farm-workers, and others. *Church of England Council of Empire Settlement* represents the Church as a whole in all matters relating to empire settlement. *Young Men's Christian Association* co-operates with the Churches in Canada and Australia in settlement work. *The Society for the Oversea Settlement of British Women* acts as the Women's Branch of the Oversea Settlement Department and is an amalgamation of the prin. women's E. S. Other societies or agencies which are concerned, *inter alia*, with E. are the Brit. Dominions Emigration Society, Brit. Legion (q.v.), Dr Barnardo's Homes (q.v.), Catholic Emigration Society, Middlemore Emigration Homes (Birmingham), National Association of Boys' Clubs, Scottish Council for Women's Trades, the Fellowship of the Maple Leaf (for

teachers migrating to the W. provs. of Canada and to Australia), and the 1820 Memorial Settlers' Association (for migrants to South Africa). See EMIGRATION.

Émigrés, the name applied to those who, remaining faithful to the royal house, left France on account of the Revolution. On the fall of the Bastille, 14 July 1789, the princes of the royal family, followed by many nobles, officers, monks, and priests, quitted France, the princes with their close adherents forming a court at Coblenz, others settling in Germany, Belgium, Italy, Holland, and Switzerland. Numbers of the E. served in the Prussian Army against France. Their estates were forfeited and severe laws were passed against them. Many did not return to France till after Napoleon's downfall, though granted an amnesty when he became First Consul. They were not able to recover their possessions. The term is also applied to White Russians who found shelter in France after the Russian revolution.

Emilia-Romagna, region (*compartimento*) of N. Italy, comprising the provs. of Bologna, Ferrara, Forlì, Modena, Parma, Piacenza, Ravenna, and Reggio nell'Emilia (qq.v.). It is bounded N. by Lombardy and Veneto, SW. by Liguria, S. by Tuscany, and E. by the Adriatic (qq.v.). The Aemilian Way (q.v.) crosses the region NW.-SE.; N. of this highway is fertile plainland, and to the S. are ranges of the N. Apennines (q.v.). There are foodstuff industries, and cereals, vines, fruit, hemp, and sugar-beet are grown. The chief tn is Bologna. Area 8534 sq. m.; pop. 3,587,000. See ROMAGNA.

Emin Pasha (1840-92), name adopted by Eduard Isaac Schnitzer, scientist and administrator, b. Oppeln. His parents were Jews of Silesia, where his father was a merchant. He studied medicine at Breslau Univ. and graduated at Berlin. He then went to Turkey and received an appointment on the staff of Hakkı Pasha at Scutari, taking a Turkish name and adopting the dress and customs of the Turks in order to identify himself as closely as possible with those among whom he worked. In 1865 he became a convert to Islam. In 1875 he went to Egypt, where he worked under the name of Dr Emin Effendi. Gen. Gordon appointed him in 1878 medical officer and later governor-general of the Equatorial Prov. Gordon employed him on many diplomatic missions, his extraordinary power as a linguist, together with his wonderful tact, making his services invaluable. From the abandonment of the Sudan by Egypt until the arrival of Stanley's relief expedition (1899) he held and administered this dist. single-handed. He reluctantly left with Stanley, but later returned to Central Africa in the service of Germany. He was killed by Manyema Arabs. He abolished the slave trade in his prov., studied its flora and fauna, made route surveys of over 4000 m., pursued meteorological investigations which resulted in the estab. of Lado as the E. Equatorial standard, and made vocabularies of many African dialects. He found (according

to Stanley's record) that the use of mosquito netting of a certain mesh excluded the 'miasma' of malaria, and himself kept free of fever—20 years before Manson and Ross discovered that 'miasma' was the *Anopheles* mosquito carrying the germ of malaria. His diary, ed. by F. Stuhlmann, was pub. in 1916-23. See M. Jephson and H. M. Stanley, *In Darkest Africa: Quest and Rescue of Emin*, 1890; and lives by E. W. Fressler, 1925, A. Symons, 1928, and Olivia Manning, 1947.

Eminence, title conferred on cardinals by Pope Urban VIII (1631). They had previously been Most Illustrious.

Eminent Domain, the *dominium eminens* of the law, a phrase denoting the universal right in the public over property. In accordance with this law the gov. may compel a private individual to give up, on receipt of compensation, property required for the public good.

Eminescu, Mihail (1849-89), Rumanian poet. He ran away from home, and between 1864 and 1869 lived with travelling companies of actors. In 1869 he was sent to Vienna to study and from there sent his first poems, *Convorbiri literare*. He went to Berlin but did not complete his doctorate. On his return, 1874, he was made director of the library at Jassy and then a school inspector. From 1876 he lived in increasing poverty as a journalist. In 1883 he went into a lunatic asylum and was discharged cured, but he had a relapse in 1889. He was murdered by a fellow patient. Himself a collector of folk poetry, he was influenced by it, and also by Ger. and Fr. romanticism. Sometimes he is a Schopenhauerian pessimist, sometimes a vigorous conservative satirist. (He saw the nobles and the peasants as the only true Rumanians and the middle classes as foreigners. For him liberalism was the ruin of a nation.) Sometimes he wrote love poetry with a deceptive appearance of facility. An Eng. trans. of selected *Poems* was pub. in 1930. See F. Long, *Eminescu als Dichter und Denker*, 1928.

Emir, Ameer, Amir (Arabic *amir*, one in command), commander of an army, or a governor, and applied to the sons of the caliph, so coming to mean prince. Umar, the 2nd caliph, took the title *amir al-muminin*, commander of the believers, which was thus appropriated to the head of the Muslim world. Some rulers took the less grandiloquent title *amir al-muslimin*, commander of the Muslims. For a time the caliphs of Baghdad were dominated by ministers called *amir al-umara* (cf. Turkish *beglerbeg*), commander of commanders. Till recently the ruler of Afghanistan was content with the title *amir*.

Emir al Mumenin, see COMMANDER OF THE FAITHFUL.

Emmanuel, see IMMANUEL.

Emmanuel College, Cambridge, was founded in 1584 by Sir Walter Mildmay in support of the Protestant cause. It stands on the site of the former Dominican house: its hall was the friar's chapel. The college chapel and its cloister are the work of Sir Christopher Wren (1677). The

famous Amer. univ. is named after John Harvard who was one of a considerable number of E. men who migrated to New England to create a society there which, as a dissident minority, they saw they could not create in England. Of its most famous son, the traveller Gulliver, the college has no record.

Emmaus, vil. of Judea, not identical with the present E., but possibly situated in the valley of the Urtas, 7 m. from Jerusalem, where remains of important baths have been discovered. Josephus says that E. means 'warm bath.' Hero Jesus appeared to 2 disciples on Easter Day (Luke xxiv). The site may be the present Kubebe, or Amwas.

Emmendingen, Ger. tn in the *Land* of Baden-Württemberg (q.v.), 75 m. SW. of Stuttgart (q.v.). It has an auct. castle and other old buildings. In the vicinity are 2 ruined fortresses. Pop. 15,000.

Emmental, valley of the R. Emment, one of the finest of Switzerland, in the canton of Bern. Famous for its cheese. Gottlieb (q.v.), the famous Swiss novelist, was pastor of the vil. of Lützelfüh, in the Upper Emmental, 1832-54.

Emmerich, Ger. tn in the *Land* of North Rhine-Westphalia (q.v.), 49 m. NNW. of Düsseldorf (q.v.). It is on the r. b. of the Rhine (q.v.) near the Dutch frontier. St Willibrord (q.v.) is said to have founded a church here in 697. During the Second World War, in the operations of Mar. 1945 for crossing the Rhine, the Canadian troops held the line of the Rhine and Maas (see MEUSE) from E. westward to the sea to ensure the security of the bridgehead over the Rhine at Nijmegen and to guard the Scheldt estuary (see WESTERN FRONT IN SECOND WORLD WAR). The tn, which is very Dutch in appearance, was severely damaged by bombing and in the fighting. There are manufs. of oils, paper, and foodstuffs. Pop. 14,000.

Emmet, Robert (1778-1803), Irish patriot, b. Dublin. He distinguished himself at Trinity College, Dublin, by his brilliant oratory. As a protest against the visitation of Lord Clare and Dr Duigenan in 1798 to investigate the political tendencies of the students, he withdrew his name from the books. Like his brother, Thomas Addis E., he was an enthusiastic United Irishman (see UNITED IRISHMEN), and after a visit to Paris in 1802, where he interviewed Napoleon and Talleyrand, he engineered a rising in Ireland. The idea was to seize Dublin Castle, and to hold the lord-lieutenant as a hostage; but the insurrection was ill-planned. Only a small body of revolutionaries assembled, and these committed such crimes of violence that E., broken-hearted, fled. He was captured, tried, found guilty, and hanged. The poignant story of his love for Sarah Curran has been told by John Brophy in his novel *Sarah*, 1948. See IRELAND, *History*.

Emmet, see ANT.

Emmich, Otto A. T. von (1848-1915), Ger. gen., was early prominent in the First World War through being in command of the force that successfully besieged Liège in Belgium. In 1915 he went

to the E. Front as a corps commander, and took a successful part in the battles of the Dunajec (q.v.) and the San. His corps was situated on the right of Mackensen's Eleventh Army; it distinguished itself particularly during the operations of 2-5 May 1915, when Mackensen broke through the Russian line between Gorlice and Tarnow.

Emmius, Ubbo (1547-1625), Dutch historian and chronologist, prof. of Greek and of hist. at Liers, E. Friesland. He is best known as the author of *Vetus Grecia Illustrata*.

Emona, see LJUBLJANA.

Emotion, term used in psychology. We may say that the states of the mind may be classified under *knowing*, *feeling*, or *willing*. The 1st term includes such facts as perceiving, remembering, and reasoning, and they may further be said to be *intellectual* operations. The 2nd term would include all pleasurable and painful conditions of the mind, whether simple, such as the distress of hunger, or complex, such as love; and it is in this class of mental states that the *emotions* are included. The 3rd term covers all active mental operations, e.g. walking, speaking, and also efforts to do things, active impulses, and resolutions.

Feeling marks any state of consciousness which is pleasurable or painful. Those effects which depend merely upon nerve stimulation, such as the pains of hunger and thirst, and their corresponding pleasures, and which are commonly marked as *sensations*, are included under the term *feeling*, as well as those effects which depend upon some amount of mental activity, such as fear, hope, regret, etc., which are known as E.s.

The correlation between the states of feeling and their physical accompaniments illustrates the close connection between mind and body. Facial movements, gestures, modifications of voice, and even internal organic effects are well known to accompany feeling. All feeling involves an excitation of nerve-centres, and diffuses itself over the nervous system in a circle of effects. The development and continuance of a feeling depend upon this cycle of effects. Expressive movements are partly instinctive and appear early in life—e.g. crying, frowning, etc.—and partly acquired. Imitation plays a big part, and it is easy to see how in this way we acquire actions expressive of ennui, moral displeasure, etc. Sev. theories have been advanced to explain these movements. It is generally agreed that all feeling tends to produce certain bodily effects which are proportionate in strength and range to the intensity and persistence of the feeling. Spencer pointed out that, as the feeling becomes more intense, so larger muscles are called into play, e.g. twitching of fingers, then movement of the arms, and so on as agitation increases. Wundt amplified this by saying that the motor centres of attention are involved, and the due regulation of thought disturbed. Violent E. of any kind illustrates this well. To account for the distinctive movements attached to the

various feelings. Bain suggested that pleasure is connected with an increase, and pain with a decrease, in the vital energies, and so the expression of pleasure would have greater vigour of action than the expression of pain. But Sully showed that strong and violent feelings, whether pleasurable or painful, have very like results, and that the strong contrast in energy between certain feelings, say anger and fear, does not coincide with a contrast of pleasure and pain. Therefore he suggests that it is connected with the feeling as energetic in character, or depressing and paralysing.

Feelings may be divided into 2 divs., those arising directly from a process of nervous stimulation or the excitation of sensory nerves, and those depending on some manner of mental activity. The first, which may be termed bodily feelings, involve processes in the outlying parts of the organism, and may be called *sense feelings*. The second, being connected with central nerve forces (the brain), may be called E.s. There is also a close correspondence between the instincts and the E.s. Thus the instinct of self-preservation gives rise to the E. of fear (e.g. in battle or when crossing a main road) and the instinct of self-perpetuation or reproduction gives rise to the E. of love.

Sense-feelings may arise from disturbances of some part of the organism, as in hunger, thirst, heat, and cold sensations, etc., and pleasures or pains connected with the excitation of special senses, and the pleasures or pains of muscular sensation, etc. The latter class are much more easy to distinguish and localise than the former.

The general laws which apply to mental development also apply to the development of the E.s. They are deepened by exercise, and there is a progress from simple feelings to complex E.s. The growth of the E.s cannot be fully explained as the result of individual experience. They arise uniformly when the appropriate circumstances occur, usually early in life, e.g. the child has a disposition to feel anger when he is annoyed or injured. On the other hand, an instinctive element enters into feelings which may be shown to be largely the result of individual experience. It may be noted that this instinctive capacity for any particular E. is not the same in all cases. These instinctive emotional tendencies can be explained by referring them to ancestral experience and allowing that there are transmitted associations.

The study of the development of the E.s enables us to divide them roughly into 3 groups or orders, giving successive stages in the progress of the emotional life. First we get *individual or personal E.s* which are confined to the individual and depend upon a more or less distinct personal reference. These grow up around self and self-activities, the pleasures of hope, success, reputation, etc., or they attach themselves to objects having a special personal relation, as in the child's love of his mother. Secondly, we have *sympathetic E.s*, which involve participa-

tion in other people's experiences. They presuppose a certain amount of personal emotional experience, and are non-personal and common in direct contrast to individual E.s. Thirdly, we have the highly complex E.s. derived from *sentiments*, viz. patriotism, love of humanity, etc. These sentiments may be subdivided into 3 classes: (a) *intellectual*, or the attachment to truth; (b) *aesthetic*, or admiration of the beautiful; and (c) *moral*, or reverence for *duty*, which includes love of humanity and the worship of moral excellence. See H. Spencer, *Principles of Psychology*, 1855; A. Bain, *The Emotions and the Will*, 1859; C. Darwin, *Expression of the Emotions in Man and Animals*, 1872; J. Sully, *Outlines of Psychology*, with *Special Reference to Education*, 1884; C. G. Jung, *Psychological Types*, 1923; J. Macmurray, *Reason and Emotion*, 1935. See also CHILD STUDY; PHILOSOPHY; PSYCHOLOGY.

Empecinado, Don Juan Martin Diaz, El (1775-1825), Sp. patriot, a guerilla chief who harried the Fr. during the Peninsular War. He became field-marshal in the regular army, but, involving himself later in the rebellions of the Constitutionalists, he was hanged. He incorporated his sobriquet *el empecinado* ('the pitch-coloured') with his name.

Empedocle, Porto, see AGRIGENTO.

Empedocles (b. c. 490 BC), Gk philosopher, law-giver, physician, poet, and high priest of Agrigentum in Sicily. He is said to have committed suicide by throwing himself into the crater of Mt Etna. E. analysed the universe into the *four elements*, fire, air, earth, and water, fire being the essence of life, the other elements forming the basis of matter. His system is founded on this theory together with another which supposes 2 opposing forces, Love and Hate. The world began when the elements, which had been torn asunder by the force of Hate, tended to come together again under the influence of Love. The different species arose out of the different minglings of the elements. The importance of E. lies mainly, however, in his biological theories of perception and thought, i.e. in his reassertion against Parmenides of the validity of the senses. Fragments of 2 works, *On Nature and Purifications*, have survived. See J. Burnet, *Early Greek Philosophy* (4th ed.), 1948; W. Jaeger, *Theology of the Early Greek Philosophers*, 1947.

Emperor. Among the Romans, *emperor* or *imperator* was originally the title borne by the commander of an army, then by the governors of provs., then by the head of the Rom. empire. In modern times it became the highest title of dignity and was assumed by sev. European sovereigns who ruled over a vast ter. where dwelt people of more than one nationality. The rulers of Russia, Austria-Hungary, and Germany before the First World War were called *emperor*. Queen Victoria assumed the title of *empress of India* in 1876, but it lapsed with the passing of the Indian Independence Act in 1947.

Emperor Moth, name given to *Saturnia pavonia*, a species of Lepidoptera, and

also applied to the whole family of *Saturniidae*. *S. pavonia* is common in England, though rare in Scotland, and in the heather dists. the bright-green larvae, studded with red or yellow warts, may often be observed. Their general colour is greyish with purple and orange tinges, and they are remarkable for the eyespot common to both wings of both sexes.

Emphysema, an inflation; an abnormal presence of air. Medically, it consists of an enlargement of air vesicles of the lungs, which are the terminations of air passages. It occurs in bronchitis and other conditions where there is excessive coughing. It causes lessening of the aerating surface of the lung and shortness of breath. In older persons with chronic bronchitis the chest becomes enlarged and barrel-shaped. Increased work is thrown on the heart to drive the blood through the inflated lung; in time it fails to drive sufficient blood through, so that the heart's action is embarrassed, and the badly aerated blood causes the sufferer to look blue.

Surgical emphysema is due to air in the general connective tissues of the body, from injury of some air-passage or wound of the chest-wall. When the swelling of surgical E. is palpated with the fingers it gives a curious sensation like the crackling of paper, known as *crepitus*.

Emphyteusis (Gk 'a planting in'), or **Jus Emphyteuticarium**, in anct. Rom. law, the right of enjoying all the fruits, and disposing at pleasure, of the *praedium* (estate) of another, subject to the payment of a yearly rent (*pensio* or *canon*) to the owner. Both lands and buildings could be subject to E. Though the *emphyteuta*, or person who enjoyed the right, could dispose of his right as he pleased, the *dominus*, or owner of the land or building itself, had a right of pre-emption. The old right relating to *agrovectigales*—leases of lands held of the Rom. people, of municipalities, or of the college of priests, i.e. short or long lettings by the state—was, about the time of Justinian, united with that of E. The J. E., though based on an institution of the civil law, only assumed its peculiar character in the time of the Lower Empire, whereas other and equally characteristic *servitudes* owed their existence to the praetors.

Empire, British, see BRITISH COMMONWEALTH AND EMPIRE.

Empire, Eastern, see BYZANTINE EMPIRE.

Empire Day, the celebration, throughout the Brit. Empire, of the anniversary of Queen Victoria's birthday, 24 May. It has been officially recognised since 1902, when the earl of Meath inaugurated the festival as a means of training school children in good citizenship.

Empire Marketing Board, official executive body formed in 1926 for the purpose of developing trade with the Empire. The Board assisted financially estab. scientific institutions on the advice of various gov. organisations at home or overseas, and by advertisements, exhibitions, lectures, films, and posters sought to stimulate interest in the Empire. It was dissolved in 1933.

Empire Music Hall, formerly one of the chief London music halls, in Leicester Square, W., estab. in 1887. Originally a theatre, it was later converted into a cinema. The Empire was particularly noted for its ballets and revues.

'Empire News', Brit. national Sunday paper and largest selling newspaper of the Kemsley group, with a circulation of more than 2,500,000. Its general appeal is that of a popular family newspaper with particular emphasis on features and sport. Founded in 1884 as the *Umpire*, its title was changed in 1917 to the *E. N.* and in 1944 to the *Sunday E. N.* In 1954 it began to print special Welsh and W. of England eds. in Cardiff—the only Sunday paper to print in Wales. In 1955 it incorporated the *Sunday Chronicle* (q.v.).

Empire Settlement Acts, see COMMONWEALTH AND EMPIRE SETTLEMENT ACTS.

Empire State, see NEW YORK.

Empire State of the South, see GEORGIA.

Empire Style, see ARCHITECTURE, VIII.

Empirical Formula, in chemistry, the simplest formula for a substance in which the atoms of the various elements in the compound are shown in the correct ratio but not necessarily the correct numbers. Thus the E. F. for grape-sugar is $\text{C}_6\text{H}_{12}\text{O}_6$ but its true formula is $\text{C}_6\text{H}_{10}\text{O}_5$. In the case of most solids only the E. formulae are known, the true formulae being indeterminate.

Empiricism (Gk *empeiria*, trial, experience), philosophical term signifying a belief that actual sense-experience is the source of all ideas and excluding all possibility of *a priori* knowledge or conceptions. This view arose out of the system of Heraclitus, rejected by Socrates and Plato. It maintains that the mind at first is a *tabula rasa* (clean slate) upon which experience must write all impressions. The sophists of antiquity were empiricists. The scholastics taught that the mind can attain to true intellectual apprehension not by innate ideas but by concepts derived from sense-experience. Descartes's philosophy estab. a compromise, one part of knowledge being considered innate, another empirical or derived from outside. (See INNATE IDEAS.) Many Eng. thinkers have held empiricist views (Locke, Hume, John Stuart Mill). Locke made experience the basis of all knowledge, sensation, and reflection, while Berkeley and Hume developed this philosophy on different lines. This E. formed a strong contrast to the Cartesian 'rationalism' of the Continent. Its chief fault is perhaps that it gives a wrong account of experience, representing it as piece-meal, whereas the 2 elements of knowledge (*a posteriori* facts of experience, and *a priori* facts) are essentially and inseparably united, as was recognised by Kant. In medicine, the term empiric was applied to those who (in opposition to the Dogmatici and Methodici) drew their rules of practice from personal experience, disregarding the more scientific methods of inference and deduction and all philosophical theory. Hence the word came to mean an untrained practitioner, one who prescribed solely on individual observation and

experiment, a quack-doctor. Empirical laws are those adopted merely because found (or supposed) to be beneficial and successful in practice, without any reason authorising them (as distinguished from 'causal' laws).

Employers' Liability, see **WORKMEN'S COMPENSATION**; **INSURANCE**.

Employment Exchanges. These are local offices, at first called Labour Exchanges by the Labour Exchanges Act, 1909, estab. for the purpose of mobilising labour, gathering information as to employers requiring workpeople, and, conversely, as to workpeople seeking employment, and, generally, enabling applicants for labour to obtain it. They are an antidote to unemployment borrowed from Germany, and in view of the success attending the experiment in that country, it is remarkable that they were not estab. in England before, though in this connection considerable good had been done by local distress committees under the Unemployed Workmen Act, 1905. The Act of 1909 empowers the Ministry of Labour (to which department the duties were transferred in 1917 from the Board of Trade) to set up and maintain E. E. wherever they think fit, and to assist any E. E. maintained by other authorities. The Ministry of Labour was empowered to make general regulations with respect to the management of E. E., and the expenses incidental to administering the Act are payable out of moneys provided by Parliament. The duties of E. E. were considerably increased when they were extended to the scheme of unemployment insurance (q.v.) instituted in 1912. The trades which benefited most by these institutions were building, transport, metal, machine and implement industries, agriculture, textiles, and general commerce. Vacancies filled by women workers include those in domestic work, clothing industries, agriculture, and food and drink trades, while juvenile employment is also widely covered.

The Second World War had a marked effect in solving the intractable unemployment problem which had been so marked a feature of the inter-war decades. In the post-war period the E. E. lost much of their original importance as means of putting unemployed people into touch with employers seeking workers. The numbers of registered unemployed fell to a quarter of a million or less (1 per cent of the working pop.); and the dominant problem in the labour market was changed from unemployment to overfull employment, the notified vacancies sometimes exceeding the number of registered unemployed. For statistics of unemployment in later years, see the monthly issues in the *Ministry of Labour Gazette*. See also **UNEMPLOYMENT**.

Empoli, lt. tn, in Tuscany (q.v.), on the Arno (q.v.), 15 m. W. of Florence. It was severely damaged during the Second World War; among the anc't buildings which suffered was the 11th-cent. Collegiate church (now rebuilt) which has a noteworthy marble façade and contains many works of art. Textiles, pottery,

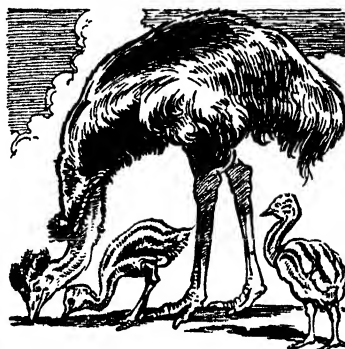
glassware, and straw goods are manufactured, and there is a large trade in grain. Pop. (tn) 17,300; (com.) 29,100.

Emporeium, see **AMPURIAS**.

Emporia, city of Kansas, U.S.A., cap. of Lyon co., 53 m. SW. of Topeka. It has railway shops, flour mills, a cheese factory, and is the commercial centre for a large agric. and stock raising region. It is the seat of the Kansas State Teachers' College and of the College of Emporia (Presbyterian). Pop. 15,669.

Emporiae, see **AMPURIAS**.

Empson (or **Emson**), Sir Richard (d. 1510), lawyer, son of a wealthy citizen of Towcester, Northants. Like Sir Edmund Dudley he was the unpopular agent of Henry VII, and was employed in exacting taxes and penalties due to the crown. He shared with Dudley a reputation for harshness and tyranny in his exactions. In 1491 he became speaker of the House of Commons, and in 1504 chancellor of the duchy of Lancaster. In the 2nd year of Henry VIII's reign he and Dudley were both convicted of tyranny and constructive treason, and were beheaded on Tower Hill.



EMU

Empyæma (literally 'pus in'; meaning pus in the cavity of the pleura). This occurs in a late stage of pleurisy (q.v.), pleurisy itself being inflammation of the pleura, which is the lining of the chest-wall and the covering of the lung. Pleurisy and E. commence in the pleura, or extend from the chest-wall, as in growths or injuries, or from the lung, as in tubercle or pneumonia.

Empyrean (Gk *pur*, fire). According to the old metaphysical philosophers, the E. was the highest and purest of the 4 celestial spheres, the region of the most rarefied elements of fire. Poetically, it is the source of light and the abode of the blessed.

Emrys, see **AMBROSIUS AURELIANUS**.

Ems, or **Bad Ems** (anc't *Amisia*), Ger. spa in the *Land of Rhineland-Palatinate* (q.v.), 33 m. NW. of Mainz (q.v.). It is on the Lahn (q.v.). It is famous as the meeting place of William I of Prussia and

the Fr. ambas. Benedetti, and as the place whence William I. despatched the telegram to Bismarck (q.v.) which precipitated the Franco-Prussian war of 1870-1. Pop. 10,000.

Ems, riv. of NW. Germany. It rises in the Teutoburger Wald (q.v.), and flows NW. across North Rhine-Westphalia and Lower Saxony to an inlet of the North Sea called the Dollart. Its great importance as a waterway is increased by its connection with sev. canals, notably the Dortmund-E. canal (q.v.). Length 205 m.

Emsdetten, tn. of North Rhine-Westphalia, near the R. Ems, 15 m. NNW. of Münster, formerly in Prussian Westphalia. E. is a centre for jute manuf. and textiles. Pop. 21,750.

Emu, or **Emeu**, a ratite bird in the family Dromæidae. Like the cassowary, to which it is allied, it is native to Australia, where it is a protected bird. It stands about 5 or 6 ft high and is second in size only to the ostrich. It differs from the cassowary in having a broad beak, no helmet, short feathers on the head and neck and no wattles on the neck, no spines on the wing, and the claws of all

3 toes are almost equal to one another. The wings are rudimentary, but the powerful legs are well adapted for running, and are capable of giving dangerous kicks when the bird is attacked. There is only 1 living species, *Dromæus novae-hollandiae*, the common E. It is monogamous, and the male wholly or partially incubates the eggs. Its diet is strictly vegetarian.

Emulsin, or **Synaptase**, a neutral substance contained in almonds with the power of acting as a ferment converting the amygdalin of almonds into oil of bitter almonds, hydrocyanic acid, and a sugar. In its pure form it is an odourless and tasteless white powder, which is soluble in water.

Emulsion (a suspension, that is, an even diffusion, which does not separate on standing, of a heavier substance in a lighter medium), a medical preparation in which the drugs neither rise nor fall on standing. Thus oil, a heavier substance, is suspended by yolk of egg in water, which is lighter. Amongst other drugs, olive oil and petroleum are frequently given as E.s.

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